

PRISMA

de espaitec

UNA VISIÓN 360°
DE TECNOLOGÍA
E INNOVACIÓN

SEPTIEMBRE
OCTUBRE
2022

Computación cuántica
y nuevos materiales

Computación cuántica
y finanzas

Gestión aeroportuaria:
el camino de la automa-
tizació en los mares

Inteligencia artificial /
Gemelos digitales en
el sector del agua

Contenidos

NOTICIAS

- 04 ● Cryptography & Quantum Computing
- 04 ● New Measurements Quantifying 'Qudits Provide Glimpse of Quantum Future
- 05 ● El BSC, seleccionado para acoger uno de los primeros ordenadores cuánticos europeos
- 05 ● Autonomous Ships Market worth \$8.2 billion by 2030
- 05 ● Port of Rotterdam builds untappable internet for their critical communication systems, offered by quantum technology
- 06 ● Chicago scientists are testing an unhackable quantum internet in their basement closet
- 06 ● UKQuantum Launches Consortium to Accelerate UK Innovation
- 06 ● Boron Nitride with a Twist Could Lead to New Way to Make Qubits
- 07 ● The Nobel Prize in Physics 2022
- 07 ● Physicists Rewrite a Quantum Rule That Clashes With Our Universe
- 07 ● Conventional Computers Can Learn to Solve Tricky Quantum Problems
- 08 ● NSA Releases Future Quantum-Resistant (QR) Algorithm Requirements for National Security Systems
- 08 ● Five quantum products ready for real-world use

EMPRESAS Y MERCADOS

- 09 ● A Deeper Look at D-Wave Systems Launch in AWS Marketplace
- 09 ● CSCO: Invest in control tower and digital twins to build your cognitive supply chains
- 10 ● Rivada Space Networks Signs MoU with Quantum Encryption Leader SpeQtral to Develop Ultra-Secure Communications for Government and Enterprise Worldwide
- 10 ● Rolls-Royce and Classiq collaborate on Quantum Algorithm Design For Computational Fluid Dynamics
- 10 ● Introducing Hardware Noise Model Simulation for IonQ Aria and IonQ Harmony
- 11 ● Diving into Smart Water Management
- 11 ● Amazon and Harvard launch alliance to advance research in quantum networking
- 11 ● CEO Jack Hidary on SandboxAQ's Ambitions and Near-term Milestones
- 12 ● Quantinuum, Mitsui and Co. Sign Strategic Agreement to Develop the Quantum Computing Market in Japan and Asia-Pacific
- 12 ● Efficiency on every level: Digital twins for desalination
- 12 ● Construction starts for MV WAVELAB: Autonomous ferries are getting closer
- 13 ● Carolina Venegas: "España tiene potencial para acelerar su proceso de transformación digital"
- 13 ● DT-GEO Desarrollará Una Tecnología Que Simule Terremotos, Erupciones Y Tsunamis
- 13 ● Los avances de los puertos hacia una Industria 4.0

PATENTES

- 14  Automatically determining an acquisition threshold for an exchange item
- 14  Quantum computation for bill of materials recommendations
- 15  Quantum authentication in wireless communication networks
- 15  Secure symmetric key distribution
- 15  Using an internal ledger with blockchain transactions
- 15  Quantum circuit compilation method and device, compilation framework and Quantum operating system
- 16  Agile cryptographic deployment service
- 16  A processor and a method for performing Tensor Network Contraction in a Quantum Simulator
- 16  Post-Quantum Cryptography secured Execution Environments for Edge Devices
- 16  Quantum safe Key Exchange Scheme
- 17  Method and system for creating a Quantum secured encryption key
- 17  Method and apparatus for executing Quantum operation, and chip, device and storage medium
- 17  Monitoring system for monitoring hash-based digital signatures
- 17  Classically-Boosted Quantum Optimization
- 18  Systems and methods for post-quantum cryptography optimization
- 18  3D digital twin dam safety management system and method using 3D modeling
- 18  Turning time calculation method to prevent collision due to control delay in remote control of autonomous ship
- 18  Un método y sistema inteligente de monitoreo de agua basado en Internet de las Cosas

INFORMES SECTORIALES

- 19  Informe de AMETIC: La España Cuántica 2022: una visión empresarial
- 19  CERN Quantum Technology Initiative
- 20  State of Quantum Computing: Building a Quantum Economy
- 20  NPL (UK): Metrology Research Roadmaps

PUBLICACIONES CIENTÍFICAS

- 21  High-mobility two-dimensional carriers from surface Fermi arcs in magnetic Weyl semimetal films
- 21  Chiral superconductivity with enhanced quantized Hall responses in moiré transition metal dichalcogenides
- 22  The XP Stabiliser Formalism: a Generalisation of the Pauli Stabiliser Formalism with Arbitrary Phases
- 22  Universal control of a six-qubit quantum processor in silicon
- 22  Quantum Finance: a tutorial on quantum computing applied to the financial market
- 23  Robust quantum-network memory based on spin qubits in isotopically engineered diamond
- 23  Experimental demonstration of entanglement delivery using a quantum network stack
- 23  A data-driven digital twin for water ultrafiltration
- 24  Resource-efficient high-dimensional subspace teleportation with a quantum autoencoder
- 24  Integrating Epanet and FIWARE for Development of Water Distribution System Digital Twins

SEPTIEMBRE
OCTUBRE
2022

Noticias

Cryptography & Quantum Computing

Fuente: medium.com / **Fecha:** 14/10/2022

Computación cuántica

Finanzas

This article is intended to review how cryptography has evolved over time and the challenge presented to current cryptographic techniques with the arrival of quantum computing. Cryptography — for the layman it is a subject shrouded in mystery, viewed as complex and often involving a fair amount of intrigue. This is perfectly normal since it is all about secrets and secrecy. From the Romans' use of the Cesar cipher to the role played by the Turing machine in WWII to decipher enemy communications and to the "red phone" encrypted communications that connected Washington to Moscow during...(+)

[Ver más...](#)

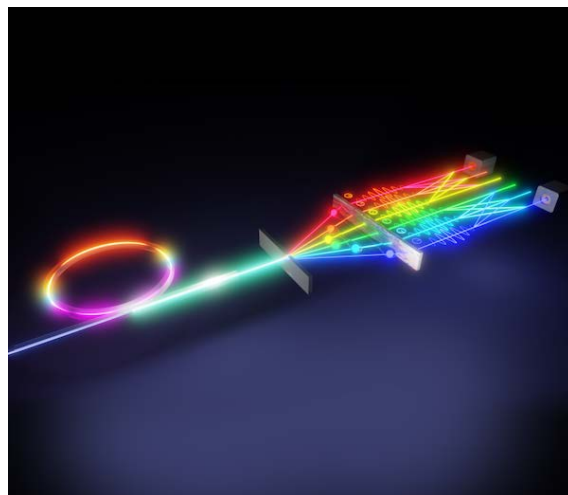
New Measurements Quantifying 'Qudits Provide Glimpse of Quantum Future

Fuente: hpcwire.com / **Fecha:** 14/10/2022

Computación cuántica

Nuevos materiales

Using existing experimental and computational resources, a multi-institutional team has developed an effective method for measuring high-dimensional qudits encoded in quantum frequency combs, which are a type of photon source, on a single optical chip. Although the word "qudit" might look like a typo, this lesser-known cousin of the qubit, or quantum bit, can carry more information and is more resistant to noise — both of which are key qualities needed to improve the performance of quantum networks, quantum key di...(+)

[Ver más...](#)

El BSC, seleccionado para acoger uno de los primeros ordenadores cuánticos europeos

Fuente: bsc.es / Fecha: 10/10/2022

Computación cuántica

El consorcio de supercomputación de la Unión Europea ha escogido al BSC-CNS como uno de los seis centros que albergarán la primera red europea de computación cuántica. Este hito es uno de los primeros resultados del programa QuantumSpain, promovido por el Gobierno a través de la Secretaría de Estado de Digitalización e Inteligencia Artificial (SEDIA), y permitirá reforzar el liderazgo europeo del ecosistema nacional de Computación Cuántica, atrayendo una infraestructura que supondrá una inversión de 12,5 millo...(+)

Ver más...



Autonomous Ships Market worth \$8.2 billion by 2030

Fuente: marketsandmarkets.com / Fecha: 10/10/2022

Gestión aeroportuaria

Autonomous Ships Market is estimated to be USD 3.9 billion in 2022 and is projected to reach USD 8.2 billion by 2030, at a CAGR of 9.6% from 2022 to 2030, according to a new report by Market-sandMarketsTM. Growth of this market can be attributed to the increasing number of autonomous ship development projects, rise in seaborne trade, developments in the military sector, and increasing need of autonomous systems to assist crew. Major players in the Autonomous ships market include Kongsberg Maritime (Norv...(+)

Ver más...



Port of Rotterdam builds untappable internet for their critical communication systems, offered by quantum technology

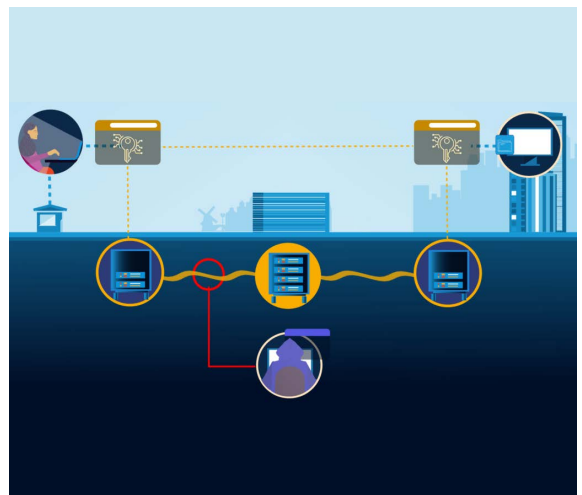
Fuente: quantumforbusiness.eu / Fecha: 9/10/2022

Computación cuántica

Gestión aeroportuaria

The Port of Rotterdam represents a significant portion of the Dutch economy, handles almost 15 million shipping containers yearly and is therefore one of the largest ports in the world. Securing its communication systems will improve the safety of tens of thousands of sea ships yearly and for a significant part the economical traffic that comes after. The safeguard of information transfer over the global internet is paramount for any large organization. Tampering ...(+)

Ver más...



Chicago scientists are testing an unhackable quantum internet in their basement closet

Fuente: washingtonpost.com / **Fecha:** 9/10/2022

Computación cuántica

Finanzas

CHICAGO — The secret to a more secure and powerful internet — one potentially impossible to hack — might be residing in a basement closet seemingly suited for brooms and mops. The three-foot-wide cubby, in the bowels of a University of Chicago laboratory, contains a slim rack of hardware discreetly firing quantum particles into a fiber-optic network. The goal: to use nature's smallest objects to share information under encryption that cannot be broken — and eventually to connect a network of quantum computers c...(+)

Ver más...



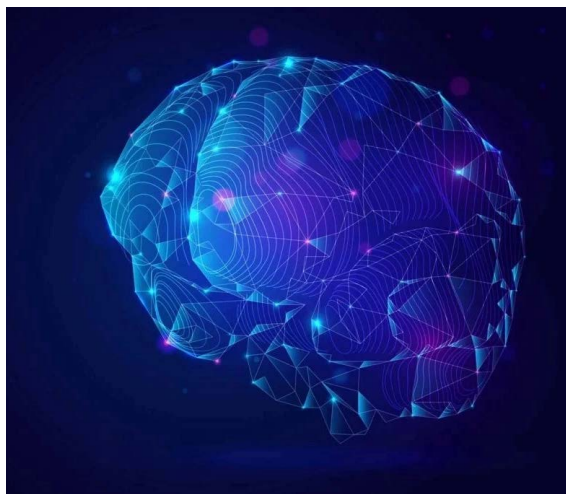
UKQuantum Launches Consortium to Accelerate UK Innovation

Fuente: thequantuminsider.com / **Fecha:** 6/10/2022

Computación cuántica

UKQuantum is an industry-led consortium founded to be the voice of the UK quantum industry. Building upon the UK's premier research and education institutions, UKQuantum will ensure that the United Kingdom remains a world leader in the quantum technology industry. Now open for membership applications, UKQuantum welcomes all quantum parties across the quantum ecosystem to join and help shape the future of quantum technology in the UK. The founding committee has already laid the foundations for a un...(+)

Ver más...



Boron Nitride with a Twist Could Lead to New Way to Make Qubits

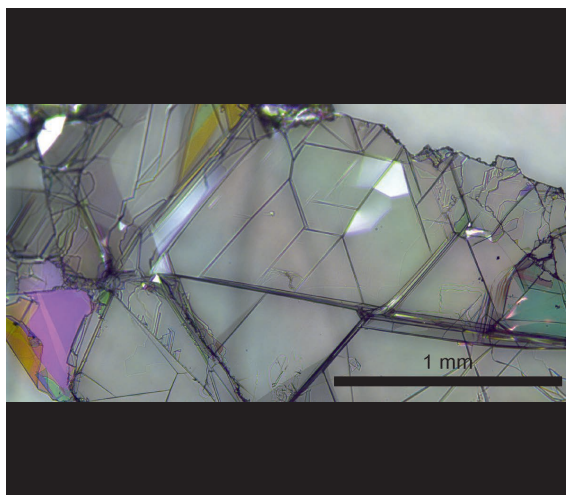
Fuente: lbl.gov / **Fecha:** 6/10/2022

Computación cuántica

Nuevos materiales

Achieving scalability in quantum processors, sensors, and networks requires novel devices that are easily manipulated between two quantum states. A team led by researchers from the Department of Energy's Lawrence Berkeley National Laboratory (Berkeley Lab) has now developed a method, using a solid-state "twisted" crystalline layered material, which gives rise to tiny light-emitting points called color centers. These color centers can be switched on and off with the simple application of an external voltage. "This is a first ..."(+)

Ver más...



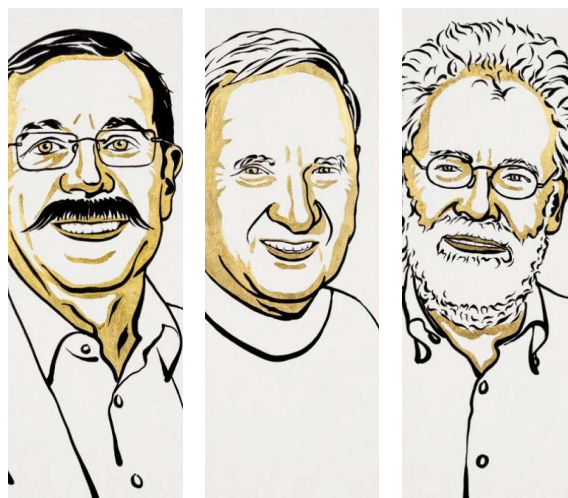
The Nobel Prize in Physics 2022

Fuente: nobelprize.org / Fecha: 31/10/2022

Computación cuántica

The Nobel Prize in Physics 2022 was awarded jointly to Alain Aspect, John F. Clauser and Anton Zeilinger “for experiments with entangled photons, establishing the violation of Bell inequalities and pioneering quantum information science”

Ver más...



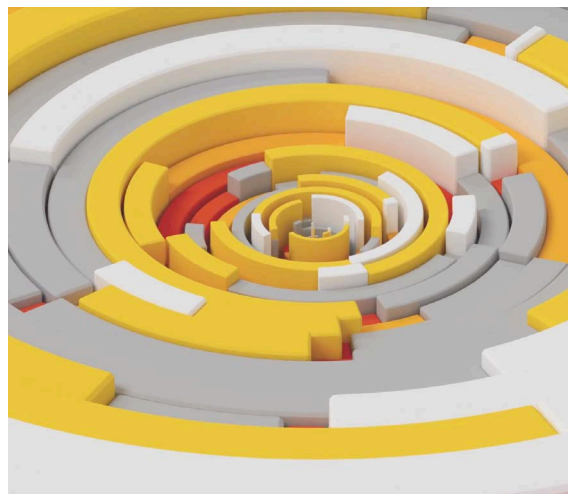
Physicists Rewrite a Quantum Rule That Clashes With Our Universe

Fuente: quantamagazine.org / Fecha: 26/09/2022

Computación cuántica

A jarring divide cleaves modern physics. On one side lies quantum theory, which portrays subatomic particles as probabilistic waves. On the other lies general relativity, Einstein's theory that space and time can bend, causing gravity. For 90 years, physicists have sought a reconciliation, a more fundamental description of reality that encompasses both quantum mechanics and gravity. But the quest has run up against thorny paradoxes. Hints are mounting that at least part of the problem lies with a principle at the center of quan...(+)

Ver más...



Conventional Computers Can Learn to Solve Tricky Quantum Problems

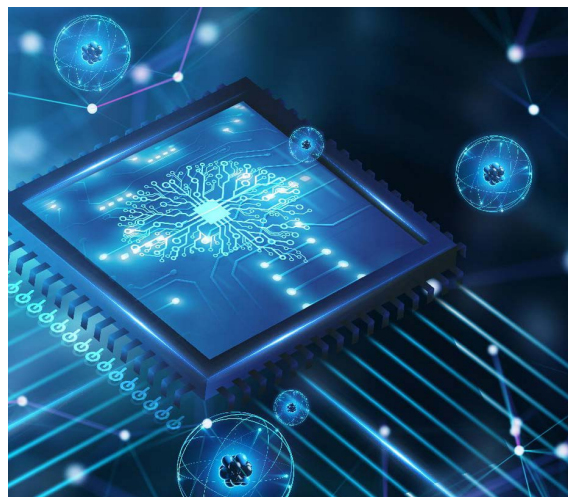
Fuente: caltech.edu / Fecha: 22/09/2022

Computación cuántica

Finanzas

There has been a lot of buzz about quantum computers and for good reason. The futuristic computers are designed to mimic what happens in nature at microscopic scales, which means they have the power to better understand the quantum realm and speed up the discovery of new materials, including pharmaceuticals, environmentally friendly chemicals, and more. However, experts say viable quantum computers are still a decade away or more. What are researchers to do in the meantime? A new Caltech-led stu...(+)

Ver más...



NSA Releases Future Quantum-Resistant (QR) Algorithm Requirements for National Security Systems

Fuente: quantamagazine.org / **Fecha:** 26/10/2022

Computación cuántica

Finanzas

The National Security Agency (NSA) released the “Commercial National Security Algorithm Suite 2.0” (CNSA 2.0) Cybersecurity Advisory (CSA) today to notify National Security Systems (NSS) owners, operators and vendors of the future quantum-resistant (QR) algorithms requirements for NSS — networks that contain classified information or are otherwise critical to military and intelligence activities. A cryptanalytically-relevant quantum computer (CRQC) would ...(+)

[Ver más...](#)



Five quantum products ready for real-world use

Fuente: ukri.org / **Fecha:** 20/09/2022

Computación cuántica

Nuevos materiales

Find out how five new inventions from wearable brain scanners to new clocks are delivering real-world benefits to multiple industries. Five devices using quantum technology are set to transform society and the economy after reaching important trial stages. Developed in the UK, they each redraw the frontiers of what is possible. Promising step-change advances affecting sectors that include: construction, defence, environmental protection, finance, healthcare. These technologies open new industrial opportunities as well as a road to high skilled employment. The ‘first five’. Wearable brain scanner. A ...(+)

[Ver más...](#)



SEPTIEMBRE
OCTUBRE
2022

Empresas y mercados

A Deeper Look at D-Wave Systems Launch in AWS Marketplace

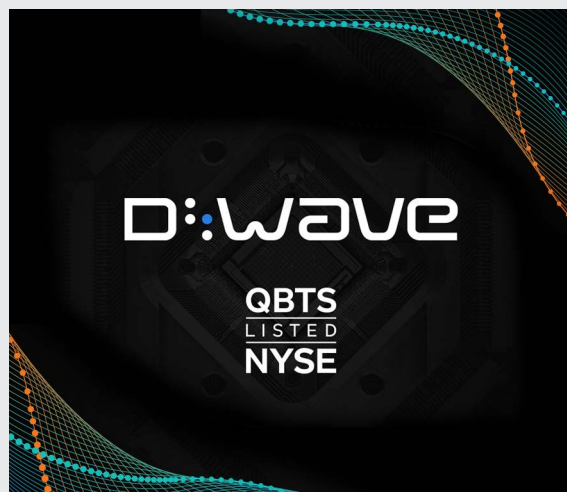
Fuente: insidequantumtechnology.com / **Fecha:** 25/10/2022

Computación cuántica

Finanzas

Recently, market-leading quantum computing company D-Wave Systems announced its launch in the Amazon Web Services (AWS) Marketplace, where vendors from all around the world can test, buy, and run the variety of products that D-Wave offers. "Quantum computing is so much more than a technology," explained Murray Thom, D-Wave's Vice President of Product Management. "It's about devices. It's not about individual companies. It's about the entire marketplace." Thanks to this launch, D-Wave is not only making its t...(+)

Ver más...



CSCO: Invest in control tower and digital twins to build your cognitive supply chains

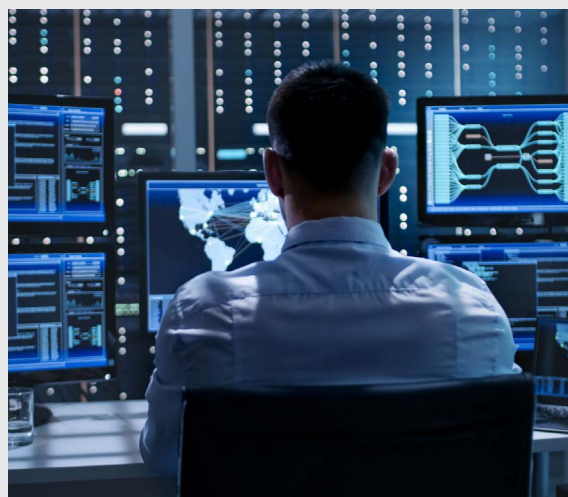
Fuente: ibm.com / **Fecha:** 20/10/2022

Gemelos digitales

Cadena de suministro

Chief supply chain officers (CSCOs) have once-in-a-generation opportunity to pivot from cost-focused reactive operations to running a resilient and agile value chain. In the past three decades, supply chain operations have expanded across the globe, incorporating multiple partners, cultures and systems. As a result, CSCOs have long struggled to answer many questions in real time. As explained in the recent IBM Consulting paper "Building intelligent, resilient and sustainable supply chains," even a well-run supply chain has w...(+)

Ver más...



Rivada Space Networks Signs MoU with Quantum Encryption Leader SpeQtral to Develop Ultra-Secure Communications for Government & Enterprise Worldwide

Fuente: ionq.com / **Fecha:** 10/10/2022

Computación cuántica Finanzas

Rivada Space Networks GmbH, a global network company launching a constellation of 600 low-earth-orbit satellites (LEO) to enable secure, global connectivity for governments and enterprises, today announced it has signed a partnership agreement with SpeQtral, an emerging leader in quantum-secure communications systems. Our world is increasingly data-driven, cloud-based and cyberse ...(+)

[Ver más...](#)



Rolls-Royce and Classiq collaborate on Quantum Algorithm Design For Computational Fluid Dynamics

Fuente: classiq.io / **Fecha:** 18/10/2022

Computación cuántica Gemelos digitales

Classiq, the leader in quantum software, today announced that it is working with Rolls-Royce to implement novel computational fluid dynamics algorithms. Computational fluid dynamics (CFD) deals with heavy, and complex numerical simulations of fluid and gas phenomena. Used in many industrial applications, CFD is key to improving advanced equipment design by, for example, optimizing aerodynamics and thermodynamics. The collaboration will combine quan...(+)

[Ver más...](#)



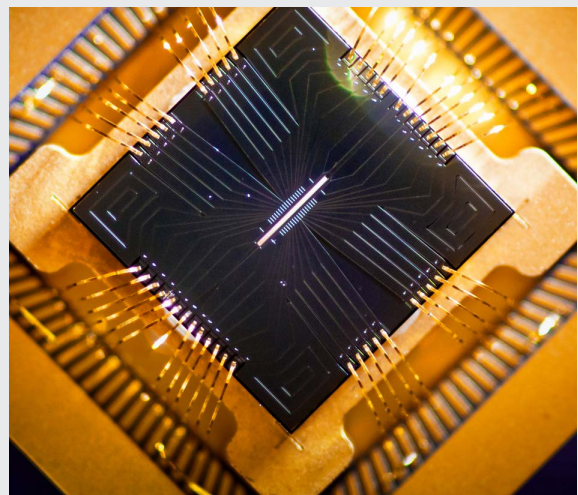
Introducing Hardware Noise Model Simulation for IonQ Aria and IonQ Harmony

Fuente: ionq.com / **Fecha:** 10/10/2022

Computación cuántica Finanzas

As of today, we've added a simulation offering for both IonQ Aria and IonQ Harmony to The IonQ Quantum Cloud. This expands our already-extensive developer tooling, allowing algorithm developers to better understand and design for the specific characteristics of IonQ hardware when prototyping quantum solutions. By adding a few new optional parameters to your simulation requests on our cloud simulator, you can run a hardware simulation, a quantum circuit simulation that behaves more like if it was run on real hardw...(+)

[Ver más...](#)



Diving into Smart Water Management

Fuente: bentley.com / **Fecha:** 20/10/2022

Gemelos digitales

Gestión del agua

Digital solutions are deeply connecting network, processes, and people in the City of Porto, Portugal. Being close to water is something that brings color, peace, and happiness to many. I've found that these sentiments are felt not only by those lounging on a beach or strolling on turquoise shores but also by the many stakeholders involved in the successful delivery of potable water and water treatment solutions to communities across the globe. While many may think of a city's water services as being about pipes and pressure, I have found that the human connections to water run m...(+)

Ver más...



Amazon and Harvard launch alliance to advance research in quantum networking

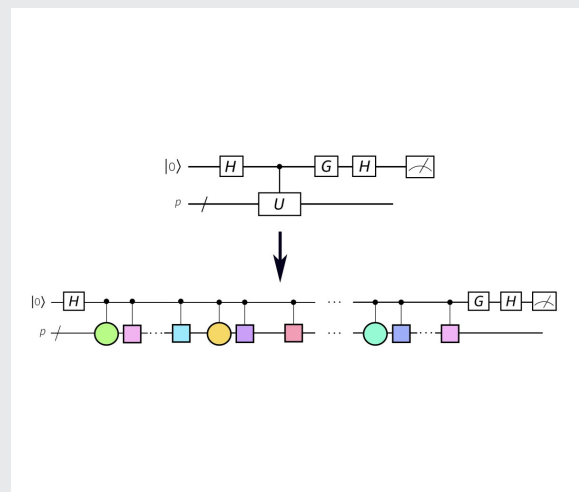
Fuente: amazon.science / **Fecha:** 12/09/2022

Computación cuántica

Finanzas

Collaboration will seek to advance the development of a quantum internet. Harvard University and Amazon Web Services (AWS) today announced they have launched a strategic alliance to advance fundamental research and innovation in quantum networking. AWS, which launched the AWS Center for Quantum Networking earlier this year, will provide funding for faculty-led research at Harvard. That funding will also help build capacity for student recruitment, training, outreach, and workforce development in this key emer...(+)

Ver más...



CEO Jack Hidary on SandboxAQ's Ambitions and Near-term Milestones

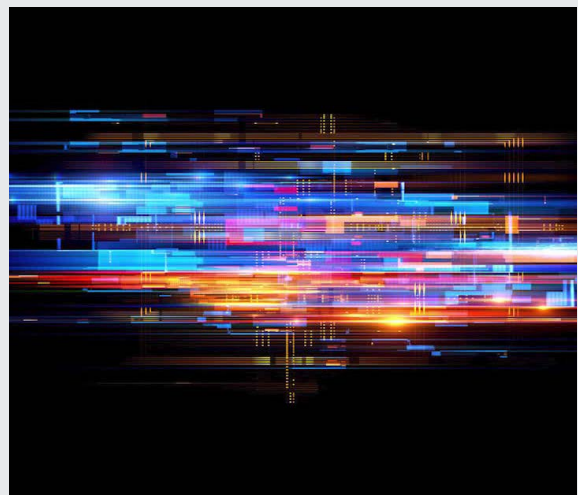
Fuente: www.hpcwire / **Fecha:** 10/10/2022

Computación cuántica

Finanzas

Spun out from Google last March, SandboxAQ is a fascinating, well-funded start-up targeting the intersection of AI and quantum technology. "As the world enters the third quantum revolution, AI + Quantum software will address significant business and scientific challenges," is the company's broad self-described mission. Part software company, part investor, SandboxAQ foresees a blended classical computing-quantum computing landscape with AI infused throughout. Its developing product portfolio comprises enterp...(+)

Ver más...



Quantinuum, Mitsui and Co. Sign Strategic Agreement to Develop the Quantum Computing Market in Japan and Asia-Pacific

Fuente: thequantuminsider.com / **Fecha:** 18/10/2022

Computación cuántica

Mitsui & Co. and Quantinuum have signed a strategic partnership agreement to collaborate in the delivery of quantum computing in Japan and the Asia-Pacific region. Mitsui, which is committed to digital transformation, and Quantinuum, one of the world's leading quantum computing companies, integrated across hardware and software, have entered this strategic partnership to develop quantum computing use cases, which are expected to drive signifi...(+)

Ver más...



Efficiency on every level: Digital twins for desalination

Fuente: globalwaterintel.com / **Fecha:** 01/09/2022

Gemelos digitales

Gestión del agua

All over the world, people and businesses increasingly rely on desalination to meet their water needs. To keep up with this steadily growing demand, desalination plants need to be built faster and operate more efficiently. Standardization, automation, and digitalization provide a whole range of solutions to increase the speed of engineering and designing such plants, as well to exploit their full potential. Through use of these tools, desalination plants can create value from data to streamline operations and maximize the effi...(+)

Ver más...



Construction starts for MV WAVELAB: Autonomous ferries are getting closer

Fuente: raytheon-anschuetz.com / **Fecha:** 01/09/2022

Vehículos autónomos

Gestión aeroportuaria

In partnership with the Clean Autonomous Public Transport Network (CAPTN) initiative in Kiel, Germany, Raytheon Anschutz leads the way toward autonomous navigation. Construction of the research vessel MV Wavelab, in collaboration with the Gebr. Friedrich shipyard in Kiel, began in March 2022 as part of the Förde Areal project, with a delivery date scheduled for the end of 2022. Semi-autonomous and autonomous driving tests in the Kiel Fjord are being conducted on the electronic-powered, 20-meter-long aluminum...(+)

Ver más...



Carolina Venegas: “España tiene potencial para acelerar su proceso de transformación digital”

Fuente: [iagua.es](https://agua.es) / Fecha: 21/10/2022

Gemelos digitales

Gestión del agua

Ingeniera civil, especialista en Ingeniería de Saneamiento Ambiental, maestra en Tecnologías Ambientales y doctora en Ciencia e Ingeniería Hidráulica y Ambiental. Carolina Venegas suma a su impresionante currículo formativo veinte años de experiencia en los cuales ha desempeñado cargos técnicos y estratégicos en autoridades ambientales, consultoras de diseño e instituciones de educación superior. La culminación, momentánea, de esta extraordinaria carrera llegaba en 2019 con el nombramiento como estratega gl...(+)

Ver más...



DT-GEO Desarrollará Una Tecnología Que Simule Terremotos, Erupciones Y Tsunamis

Fuente: geo3bcn.csic.es / Fecha: 30/09/2022

Gemelos digitales

Gestión del agua

Investigadores de Geociencias Barcelona (GEO3BCN - CSIC) coordinan A Digital Twin for GEOPhysical Extremes (DT-GEO), un proyecto europeo que creará un prototipo de gemelo digital que simule eventos naturales extremos para estudiarlos y prever su impacto. El proyecto cuenta con la cooperación de 26 instituciones europeas de investigación e incorporará sus avances al modelo digital de la Tierra Destination Earth. DT-GEO ha recibido una financiación de 15 millones de euros del programa Horizonte Europa para desarr...(+)

Ver más...



Los avances de los puertos hacia una Industria 4.0

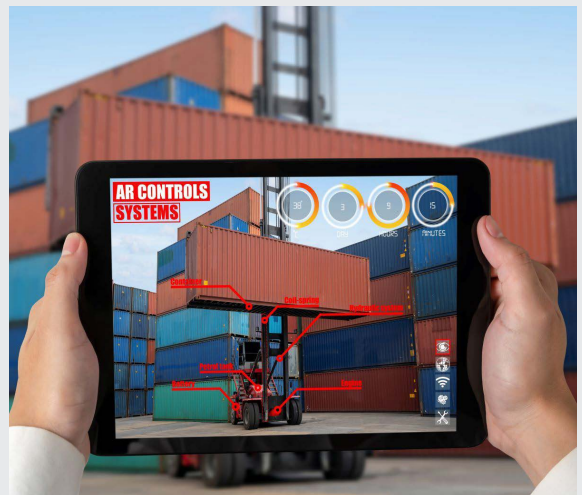
Fuente: piernext.portdebarcelona.cat / Fecha: 20/10/2022

Gestión aeroportuaria

Automatización

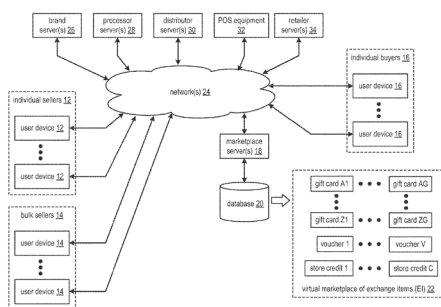
Aunque el sector portuario no ha sido un gran pionero en la automatización y la digitalización, en los últimos años ha abrazado con fuerza estos conceptos. Si bien inicialmente el objetivo era la mejora productiva, no hay que ignorar un objetivo más amplio; el de la Industria 5.0, un concepto que implica pensar más allá de los resultados empresariales para maximizar el estado de salud del planeta. En el sector industrial, el proceso de transformación digital se denomina Industria 4.0. donde el numeral 4.0 alude a la cuarta revolución industrial. La primera revolución industrial tuvo luga...(+)

Ver más...



SEPTIEMBRE
OCTUBRE
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Patentes



Automatically determining an acquisition threshold for an exchange item

Publicación: Espacenet / **Fecha:** 13/10/2022

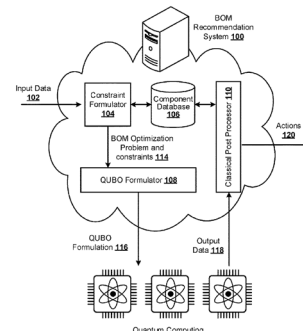
Computación cuántica

Finanzas

Solicitante: RAISE MARKETPLACE LLC [US]

A method includes receiving exchange item information regarding an exchange item from a computing device of an exchange item marketplace network. The method further includes obtaining second exchange item information regarding a plurality of exchange items associated with the exchange item i...(+)

[Ver más...](#)



Quantum computation for bill of materials recommendations

Publicación: Espacenet / **Fecha:** 13/10/2022

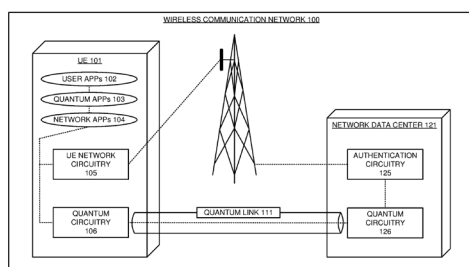
Computación cuántica

Nuevos materiales

Solicitante: ACCENTURE GLOBAL SOLUTIONS LTD [IE]

Methods, systems, and apparatus for solving cost optimization problems. In one aspect, a method includes receiving data representing a bill of materials (BOM) optimization problem, the BOM optimization problem comprising a task of determining a BOM recommendation that satisfies one or more constraints, whe...(+)

[Ver más...](#)



Quantum authentication in wireless communication networks

Fuente: Espacenet / **Fecha:** 11/10/2022

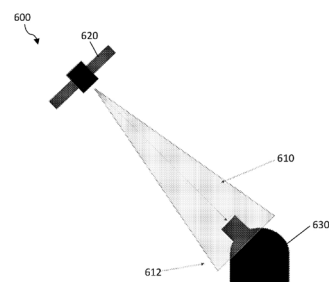
Computación cuántica

Finanzas

Solicitante: T MOBILE INNOVATIONS LLC [US]
SPRINT COMMUNICATIONS CO LP [US]

A wireless communication network performs quantum authentication for a wireless User Equipment (UE). In the wireless communication network, network quantum circuitry generates and transfers qubits. UE quantum circuitry receives and processes...

[Ver más...](#)



Secure symmetric key distribution

Fuente: Espacenet / **Fecha:** 06/10/2022

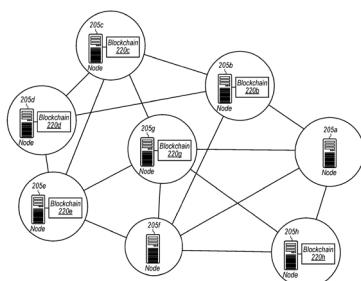
Computación cuántica

Nuevos materiales

Solicitante: SPEQTRAL PTE LTD [SG]

Methods, nodes and systems for secure symmetric key distribution are described. A method of creating symmetric keying material shared between a first node and a second node is provided. The method comprises: establishing a key-generation channel between the first node and the second node; generating shared symmetric master keying material using physical layer security...

[Ver más...](#)



Using an internal ledger with blockchain transactions

Fuente: Espacenet / **Fecha:** 00/10/2022

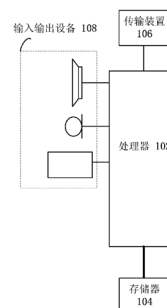
Computación cuántica

Finanzas

Solicitante: PAYPAL INC [US]

Systems, methods, and computer-readable media disclosed herein relate to reducing computation and computing resources for certain blockchain related transactions. Specifically, software algorithms and architecture allow some transactions to avoid the need for recordation on a blockchain, which carries...

[Ver más...](#)



Quantum circuit compilation method and device, compilation framework and Quantum operating system

Fuente: Espacenet / **Fecha:** 00/10/2022

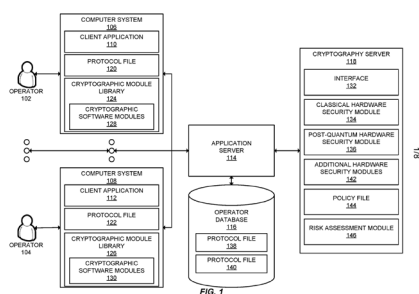
Computación cuántica

Nuevos materiales

Solicitante: ORIGIN QUANTUM COMPUTING TECH CO LTD [CN]

Disclosed are a quantum circuit compilation method and device, a compilation framework and a quantum operating system. The method comprises: determining a topological structure of a target quantum chip architecture...

[Ver más...](#)



Agile cryptographic deployment service

Fuente: Espacenet / **Fecha:** 06/10/2022

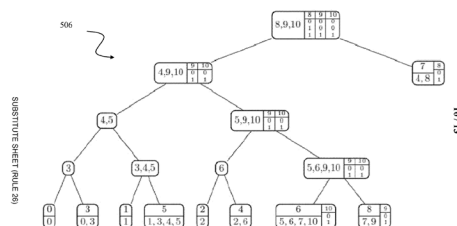
Computación cuántica

Finanzas

Solicitante: VISA INT SERVICE ASS [US]

Embodiments are directed to methods and systems for crypto-agile encryption and decryption. A computer system can possess a protocol file that identifies one or more cryptographic software modules. Using these cryptographic software modules, the computer system can generate a plurality of shared secrets ...(+)

[Ver más...](#)



A processor and a method for performing Tensor Network Contraction in a Quantum Simulator

Fuente: Espacenet / **Fecha:** 06/10/2022

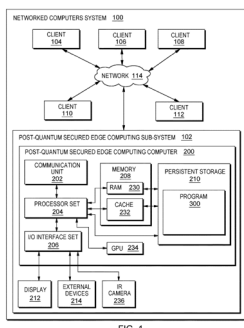
Computación cuántica

Finanzas

Solicitante: HUAWEI TECH CO LTD [CN]; PANTELEEV PAVEL ANATOLYEVICH [CN]

The present disclosure relates to the field of quantum computing, and in particular to simulating quantum circuits with a quantum simulator. The disclosure presents a processor for a quantum simulator. The pro...(+)

[Ver más...](#)



Post-Quantum Cryptography secured Execution Environments for Edge Devices

Fuente: Espacenet / **Fecha:** 06/10/2022

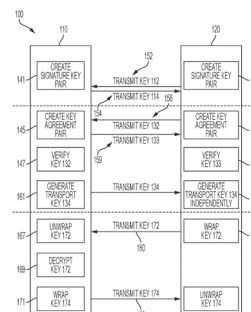
Computación cuántica

Finanzas

Solicitante: IBM [US]

Disclosed are techniques for post-quantum encrypted trusted execution environments on edge devices. An edge computing device includes a trusted execution environment that encompasses at least some SIMD processing units such as Graphics Proces...(+)

[Ver más...](#)



Quantum safe Key Exchange Scheme

Fuente: Espacenet / **Fecha:** 06/10/2022

Computación cuántica

Finanzas

Solicitante: IBM [US]

Aspects of the invention include a computer-implemented method of executing a hybrid quantum safe key exchange system. The computer-implemented method includes initially retrieving an authenticated random value from a trusted source, generating a first Z value using a first elliptic curve (EC) private key and a first certified form of an EC public key with an EC D...(+)

[Ver más...](#)

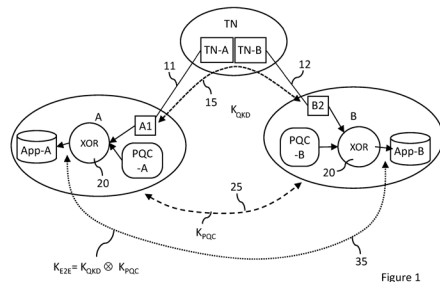


Figure 1

Method and system for creating a Quantum secured encryption key

Publicación: Espacenet / **Fecha:** 06/10/2022

Computación cuántica

Finanzas

Fuente: DEUTSCHE TELEKOM AG [DE]

A method includes a preparation step and a key agreement step. In the preparation step, a first quantum key distribution (QKD) device at a first location and a second QKD device at a second location distant from the first location together create a quantum secured key according to a QKD protocol, ...(+)

[Ver más...](#)

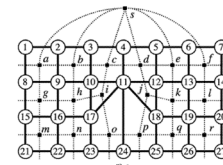


Fig. 6

	σ_x	σ_y	σ_z
(1)	$i \rightarrow i \rightarrow i \rightarrow i$	4	3
(2)	$i \rightarrow i \rightarrow i \rightarrow i$	3	4
(3)	$i \rightarrow i \rightarrow i \rightarrow i$	2	5

Fig. 7

Method and apparatus for executing Quantum operation, and chip, device and storage medium

Fuente: Espacenet / **Fecha:** 00/10/2022

Computación cuántica

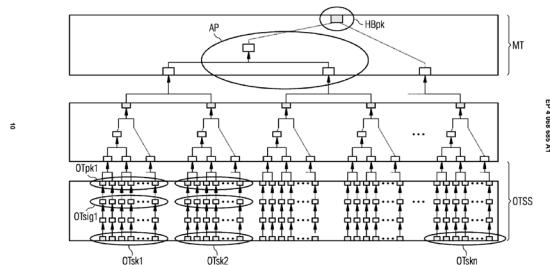
Nuevos materiales

Solicitante: TENCENT TECH SHENZHEN CO LTD [CN]

The present application relates to the field of quantum technology. Disclosed are a method and apparatus for executing a quantum operation, and a chip, a device and a storage medium. The method for executing a quantum operation comprises: acquiring n unsch...

[Ver más...](#)

FIG 1



Monitoring system for monitoring hash-based digital signatures

Fuente: Espacenet / **Fecha:** 05/10/2022

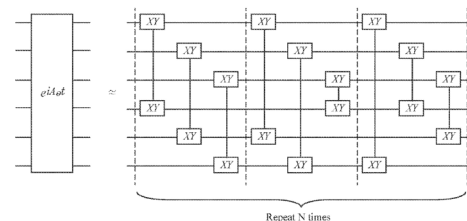
Computación cuántica

Finanzas

Solicitante: SIEMENS AG [DE]

Monitoring system for monitoring hash-based digital signatures comprising a requesting device (23, 33), a monitoring apparatus (22, 32, 40) and a signing device (21, 31), wherein the monitoring apparatus (22, 32, 40) is configured to receive a signature request data structure comprising data to be digitally sig...(+)

[Ver más...](#)



Classically-Boosted Quantum Optimization

Fuente: Espacenet / **Fecha:** 29/09/2022

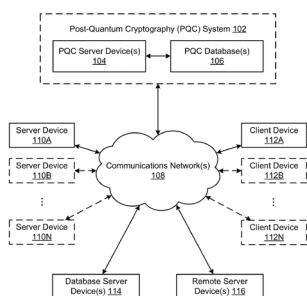
Computación cuántica

Nuevos materiales

Solicitante: ZAPATA COMPUTING INC [US]

A method and system are provided for solving combinatorial optimization problems. A classical algorithm provides an approximate or "seed" solution which is then used by a quantum circuit to search its "neighborhood" for higher-quality feasible solutions. A continuous-time quantum walk (CTQW) is implemented on a weigh...(+)

[Ver más...](#)



Systems and methods for post-quantum cryptography optimization

Fuente: Espacenet / **Fecha:** 29/09/2022

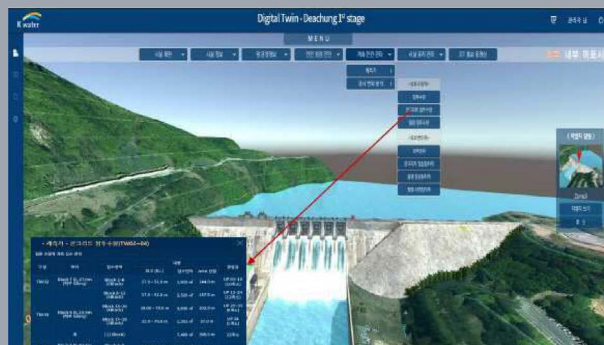
Computación cuántica

Finanzas

Solicitante: WELLS FARGO BANK NA [US]

Systems, apparatuses, methods, and computer program products are disclosed for post-quantum cryptography (PQC). An example method includes receiving data. The example method further includes receiving a set of data attributes about the data. The set of data attributes comprises one or more sel...(+)

[Ver más...](#)



3 3D digital twin dam safety management system and method using 3D modeling

Fuente: Espacenet / **Fecha:** 15/09/2022

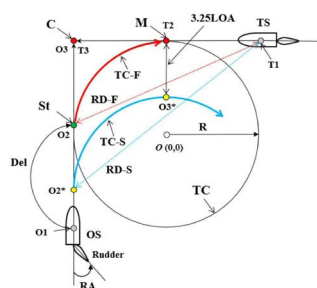
Gemelos digitales

Gestión del agua

Solicitante: GNIT CO LTD [KR]

La presente invención expresa y visualiza la estructura de la presa con modelado 3D basado en reconocimiento espacial tridimensional, y analiza los datos detectados a través de cada sensor de la presa para expresar visual y tridimensionalment...(+)

[Ver más...](#)



Turning time calculation method to prevent collision due to control delay in remote control of autonomous ship

Fuente: Espacenet / **Fecha:** 01/09/2022

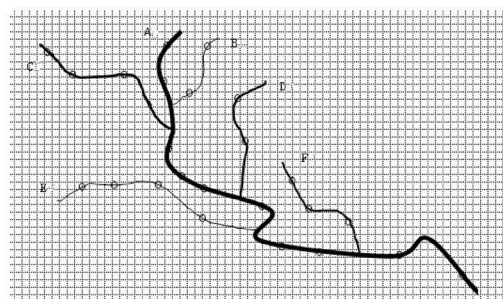
Gestión aeroportuaria

Automatización

Solicitante: KOREA MARITIME UNIV IND ACAD [KR]

La presente invención da a conocer un método de cálculo del tiempo de giro para evitar la colisión debido al retraso del control en el control remoto de un barco autónomo. La presente invención utiliza el radio de giro de un barco para prevenir científi...(+)

[Ver más...](#)



Un método y sistema inteligente de monitoreo de agua basado en Internet de las Cosas

Fuente: Espacenet / **Fecha:** 20/09/2022

Gestión aeroportuaria

Automatización

Solicitante: Sichuan Water Development Investment Co Ltd [CN]

La invención se relaciona con el campo del monitoreo y modelado de la conservación del agua, y específicamente proporciona un método y sistema inteligente de monitoreo de la conservación del agua basad...(+)

[Ver más...](#)

SEPTIEMBRE
OCTUBRE
2022

Informes sectoriales

Informe de AMETIC: La España Cuántica 2022: una visión empresarial

Fuente: ametic.es / **Fecha:** 17/10/2022

Computación cuántica

Informe “La España Cuántica 2022: una visión empresarial” elaborado por el Grupo de Trabajo de Información, Computación y Ciberseguridad Cuánticas de AMETIC. La presentación tuvo lugar el pasado 17 de octubre de 2022 en AMETIC - Madrid (entrada por Diego de León, 50). Salón: Carlos Ferrer Salat. Hora: 10:45 recepción de asistentes. El acto fue inaugurado por Carme Artigas, Secretaria de Estado de Digitalización e Inteligencia Artificial - Ministerio de Economía y Transforma...(+)

Descargar



CERN Quantum Technology Initiative

Fuente: zenodo.org / **Fecha:** 14/10/2022

Computación cuántica

Quantum technologies have the potential to revolutionise science and society as early as the next five to ten years but require resources that are not mainstream today. CERN can be at the forefront of this revolution, setting up collaborations within the Member States, as well as international initiatives. Through such endeavours, we can work to develop new computing, detectors, and communications systems, in addition to advancing knowledge of quantum systems and fundamental physics. The Quantum Technology Initiative is based on n...(+)

Descargar



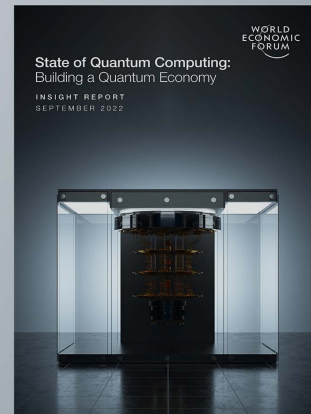
State of Quantum Computing: Building a Quantum Economy

Fuente: weforum.org / **Fecha:** 01/09/2022

Computación cuántica

Quantum computing is seen as a strategic technology by the world's leading economies. This fundamentally new way of computing – it is not just a stronger classical computer – has the potential to dramatically recast our ability to tackle climate change, hunger and disease. For many, its potential to render common cryptographic technologies obsolete, its economic potential and its impact on global digital economy make it geopolitically strategic.

Descargar



NPL (UK): Metrology Research Roadmaps

Fuente: npl.co.uk / **Fecha:** 01/09/2022

Computación cuántica

Nuevos materiales

The NPL Metrology Research Roadmaps outline our research agenda covering the next ten years. They will guide the development of specific research programmes, both within and across disciplines, as we seek to answer current scientific questions and reduce scientific and measurement uncertainties. NPL's mission is to provide the measurement capability that underpins the UK's prosperity and quality of life. We are a major enabler of innovation by delivering scientific and metrology capability to key national challenges: Environment, He...(+)

Descargar



SEPTIEMBRE
OCTUBRE
2022

Publicaciones científicas

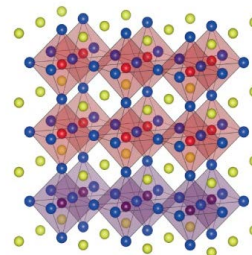
High-mobility two-dimensional carriers from surface Fermi arcs in magnetic Weyl semi-metal films

Fuente: Nature**Fecha:** 14/10/2022

Computación cuántica

High-mobility two-dimensional carriers originating from surface Fermi arcs in magnetic Weyl semimetals are highly desired for accessing exotic quantum transport phenomena and for topological electronics applications. Here, we demonstrate high-mobility two-dimensional carriers that show quantum oscillations in magnetic Weyl semimetal SrRuO₃ epitaxial films by systematic angle-dependent, high-magnetic field magnetotransport experiments. The exceptionally high-quality SrRuO₃ films were grown by state-of-the-art oxide thin film growth technologies driven by machine-learning algorithms.

SrRuO₃
 $t = 10$ or
63 nm
SrTiO₃
substrate



Ver más...

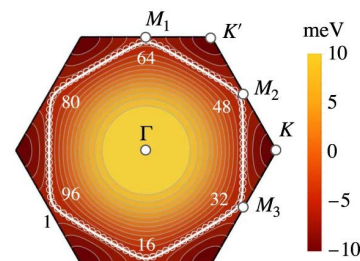


Chiral superconductivity with enhanced quantized Hall responses in moiré transition metal dichalcogenides

Fuente: Nature**Fecha:** 04/10/2022

Computación cuántica

Experimental demonstrations of tunable correlation effects in magic-angle twisted bilayer graphene have put two-dimensional moiré quantum materials at the forefront of condensed-matter research. Other twisted few-layer graphitic structures, boron-nitride, and homo- or hetero-stacks of transition metal dichalcogenides (TMDs) have further enriched the opportunities for analysis and utilization of correlations in these systems. Recent experiments within the latter material class confirmed the relevance of many-body interactions and demonstrated the importance of their extended range. Since...



Ver más...

RUHR
UNIVERSITÄT
BOCHUM

RUB

The XP Stabiliser Formalism: a Generalisation of the Pauli Stabiliser Formalism with Arbitrary Phases

Fuente: quantum-journal.org

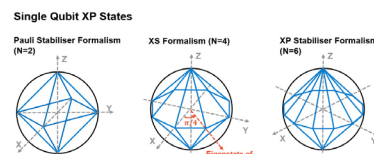
Fecha: 22/09/2022

Computación cuántica

Nuevos materiales



Future quantum computers capable of solving relevant problems will require a large number of qubits that can be operated reliably¹. However, the requirements of having a large qubit count and operating with high fidelity are typically conflicting. Spins in semiconductor quantum dots show long-term promise^{2,3} but demonstrations so far use between one and four qubits and typically optimize the fidelity of either single- or two-qubit operations, or initialization and readout^{4,5,6,7,8,9,10,11}. Here, we increase the number of qubits and simultaneously achieve respectable fidelities for universal operation, state ...(+)



Ver más...



Universal control of a six-qubit quantum processor in silicon

Fuente: nature.com

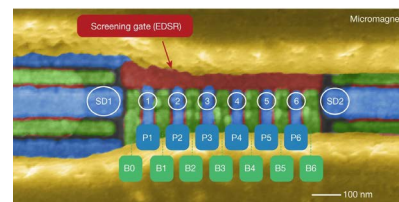
Fecha: 28/09/2022

Computación cuántica

Nuevos materiales



Future quantum computers capable of solving relevant problems will require a large number of qubits that can be operated reliably¹. However, the requirements of having a large qubit count and operating with high fidelity are typically conflicting. Spins in semiconductor quantum dots show long-term promise^{2,3} but demonstrations so far use between one and four qubits and typically optimize the fidelity of either single- or two-qubit operations, or initialization and readout^{4,5,6,7,8,9,10,11}. Here, we increase the number of qubits and simultaneously achieve respectable fidelities for universal operation, state ...(+)



Ver más...



Quantum Finance: a tutorial on quantum computing applied to the financial market

Fuente: arxiv.org

Fecha: 22/09/2022

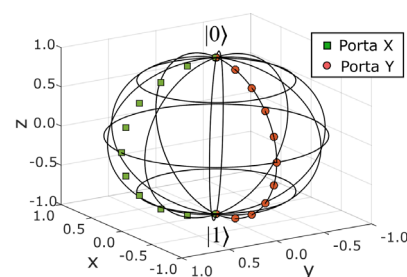
Computación cuántica

Finanzas



UNIVERSIDADE FEDERAL
DE ALAGOAS

Previously only considered a frontier area of Physics, nowadays quantum computing is one of the fastest growing research field, precisely because of its technological applications in optimization problems, machine learning, information security and simulations. The goal of this article is to introduce the fundamentals of quantum computing, focusing on a promising quantum algorithm and its application to a financial market problem. More specifically, we discuss the portfolio optimization problem using the Quantum Approximate Optimization Algorithm (QAOA). We not only describe the n...(+)



Ver más...



Robust quantum-network memory based on spin qubits in isotopically engineered diamond

Fuente: nature.com

Fecha: 18/10/2022

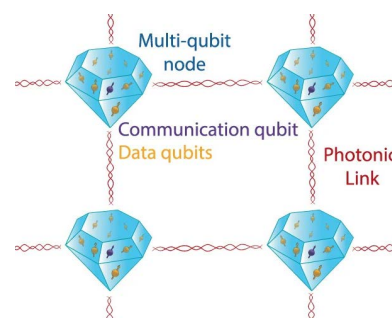
Computación cuántica

Nuevos materiales



Delft University of Technology

Quantum networks can enable quantum communication and modular quantum computation. A powerful approach is to use multi-qubit nodes that provide quantum memory and computational power. Nuclear spins associated with defects in diamond are promising qubits for this role. However, dephasing during optical entanglement distribution hinders scaling to larger systems. Here, we show that a ^{13}C -spin quantum memory in isotopically engineered diamond is robust to the optical link operation of a nitrogen-vacancy centre. The memory lifetime is improved by two orders-of-magnitude upon the...



Ver más...



Experimental demonstration of entanglement delivery using a quantum network stack

Fuente: nature.com

Fecha: 15/10/2022

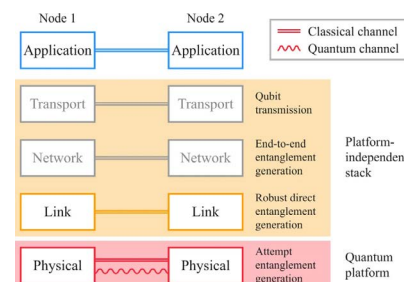
Computación cuántica

Nuevos materiales



Delft University of Technology

Scaling current quantum communication demonstrations to a large-scale quantum network will require not only advancements in quantum hardware capabilities, but also robust control of such devices to bridge the gap in user demand. Moreover, the abstraction of tasks and services offered by the quantum network should enable platform-independent applications to be executed without the knowledge of the underlying physical implementation. Here we experimentally demonstrate, using remote solid-state quantum network nodes, a link layer, and a physical layer protocol for entanglement-b...



Ver más...



A data-driven digital twin for water ultrafiltration

Fuente: nature.com

Fecha: 07/10/2022

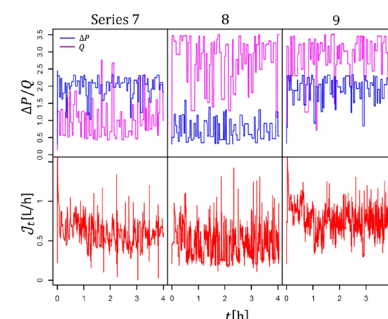
Gemelos digitales

Gestión del agua



Technical University of Denmark

Membrane-based separations are proven and useful industrial-scale technologies, suitable for automation. Digital twins are models of physical dynamical systems which continuously couple with data from a real world system to help understand and control performance. However, ultrafiltration and microfiltration membrane separation techniques lack a rigorous theoretical description due to the complex interactions and associated uncertainties. Here we report a digital-twin methodology called the Stochastic Greybox Modelling and Control (SGMC) that can account for random changes that occur during th...



Ver más...



Resource-efficient high-dimensional subspace teleportation with a quantum autoencoder

Fuente: science.org

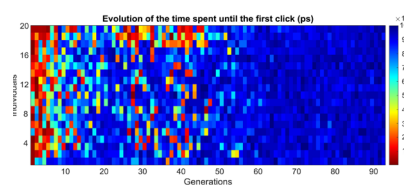
Fecha: 07/10/2022

Computación cuántica



**NANYANG
TECHNOLOGICAL
UNIVERSITY**
SINGAPORE

Quantum autoencoders serve as efficient means for quantum data compression. Here, we propose and demonstrate their use to reduce resource costs for quantum teleportation of subspaces in high-dimensional systems. We use a quantum autoencoder in a compress-teleport-decompress manner and report the first demonstration with qutrits using an integrated photonic platform for future scalability. The key strategy is to compress the dimensionality of input states by erasing redundant information and recover the initial states after chip-to-chip teleportation. Unsupervised machine learning is ap...(+)



Ver más...



Integrating Epanet and FIWARE for Development of Water Distribution System Digital Twins

Fuente: springer.com

Fecha: 19/09/2022

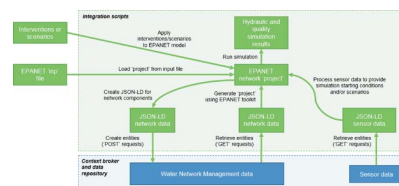
Gemelos digitales

Gestión del agua



**University
of Exeter**

Digital Twins (DTs) have significant potential in the area of water distribution system (WDS) management. However, development of DTs can be complex, with the need for any hydraulic and/or quality model to be constantly paired with data and information from multiple sources in the physical world. Transmission, conversion, validation, storage and protection of this data are all important issues, and are currently complicated by a lack of standardization. However, standardization, along with interoperability and integration are fundamental features of a successful DT. This research, therefore, aims to pr...(+)



Ver más...





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Actuación cofinanciada por la Unión Europea a través del Programa Operativo del Fondo Europeo de Desarrollo Regional (FEDER) de la Comunitat Valenciana 2014-2020