

# Introducción a la sesión **Informática y procesamiento de datos**

**Jornadas Tecnológicas del IFIC**  
**6-7 febrero 2023**

# Temática de la sesión

Esta sesión trata sobre “informática y tratamiento de datos”, pero en un sentido amplio.

Si tomamos como referencia nuestro campo, “HEP (High Energy Physics) / Nuclear” y dentro de éste la conferencia más relevante de esta temática:

*“The scientific programme for CHEP 2021 will address the **computing, networking, storage and software** needs of the world’s leading high energy and nuclear physics experiments that analyse hundreds of petabytes of data using worldwide computing resources.”*

# Temática de la sesión. CHEP 2023

## 1. Data and Metadata Organization, Management and Access

- Storage management frameworks; data access protocols; object, metadata and event store systems; content delivery and caching; data analytics; FAIR data principles; non-event data; data classification; online and offline databases.

## 2. Online Computing

- Data acquisition; high-level triggers; streaming and trigger-less data acquisition; online data calibration; online reconstruction; real-time analysis; event building; configuration and access controls; detector control systems; real-time analytics and monitoring; trigger techniques and algorithms; hardware trigger algorithms.

# Temática de la sesión. CHEP 2023

## 3. Offline Computing

- MC event generation; detector simulation; fast simulation; offline reconstruction; detector calibration; detector geometries; data quality systems; data preparation; physics performance.

## 4. Distributed Computing

- Grid middleware; monitoring and accounting frameworks; security models and tools; distributed workload management; federated authentication and authorisation infrastructures; middleware databases; software distribution and containers; heterogeneous resource brokerage

# Temática de la sesión. CHEP 2023

## 5. Sustainable and Collaborative Software Engineering

- Software frameworks; collaborative software; sustainable software; software management, continuous integration; software building; testing and quality assurance; software distribution; programming techniques and tools; integration of external toolkits.

## 6. Physics Analysis Tools

- Analysis algorithms; object identification; object calibration; analysis workflows; lattice QCD; theory calculations; high performance analysis frameworks

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## 7. Facilities and Virtualization

- Cloud resources; HPC and supercomputers; deployment of virtual machines and container technologies; anything-as-a-service; private and commercial clouds; dynamic provisioning; networking; computing centre infrastructure; management and monitoring; analysis facilities

## 8. Collaboration, Reinterpretation, Outreach and Education

- Collaborative tools; reinterpretation tools; analysis preservation and reuse; data preservation for collaboration; outreach activities; open data for outreach; training initiatives; event displays; open science cloud initiatives.analysis frameworks

# Temática de la sesión. CHEP 2023

## 9. Artificial Intelligence and Machine Learning

- Machine learning algorithms; machine learning for online; machine learning for simulation and reconstruction; machine learning tools and techniques for analysis; machine learning for reinterpretation; massive scale machine learning; hyperparameter optimization.

## 10. Exascale Science

- Algorithm scaling; exascale computing models; exabyte-scale datasets; exaflop computing power; generic algorithms; weak scaling.

# Temática de la sesión. CHEP 2023

## 11. Heterogeneous Computing and Accelerators

- Compute accelerators; concurrency in software frameworks; accelerator-as-a-service; FPGA programming; software design and implementation for heterogeneous architectures; heterogeneous resource usage for online and offline.

## 12. Quantum Computing

- Quantum computing for theory calculations; quantum computing for event generation, simulation and reconstruction; quantum computing for analysis; quantum computing applications.



# En el IFIC

En el año 2020 tuvimos 8 contribuciones:

- “Recursos de Computación Científica en el IFIC”
- “3D spine reconstruction from bi-planar radiographies for diagnosis and monitoring of spine pathologies”
- “Infraestructura computacional en NEXT”
- “Uso de supercomputacion (HPCs) en ATLAS”
- “Monitorización de las transferencias del TIER2 con ELK”
- “Desarrollos e implantaciones para el IFIC y ATLAS EventIndex”
- “Desarrollos y herramientas para el almacenamiento y procesado de grandes cantidades de datos aplicado en ATLAS Tier2 y EventIndex EI3”
- “Servicios Informáticos - Atención a usuarios”

# En el IFIC

En esta ocasión sólo tenemos 3 contribuciones:

- “Recursos de Computación Científica en el IFIC”
- “Servicios Informáticos - Atención a usuarios”
- “Desarrollos e implantaciones al servicio del IFIC y de sus experimentos”

¿ Qué ha pasado ?

- **Colisión** con otras agendas/compromisos.
- **Falta de interés**. No hay trabajo en este área en el IFIC.
- **Falta de motivación**. No veo interesante presentar aquí
- Los investigadores y proyectos ven el “computing” como una “**comodity**”. Abro el grifo y sale el agua, no se cómo y no me preocupa.
- Las charlas **han emigrado** a otra sección.

A photograph of a server room with blue lighting. The room is filled with rows of server racks. The racks are illuminated with blue light, and the floor is also lit with blue light. The ceiling has a grid of lights. The overall atmosphere is futuristic and high-tech.

**BIENVENIDOS**  
**Gracias por asistir**