

# Computing and Software for Big Science

A new journal at the interface of IT and (to start with)  
physics-driven BS



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## A first slide on what I do at Springer

- Publishing Editor of EPJ C (Particles and Fields)  
[+ Editorial Representative for Springer @ SCOAP3 , EPJC + JHEP]
- Publishing Editor of EPJ A (Hadrons and Nuclei)
- Publishing Editor of Lecture Notes in Physics
- Team Leader for a group of publishing editors dealing with journals and books in the fields of
  - Theoretical and Mathematical Physics
  - Instrumentation
  - Plasma Science and Technology

## First ideas for the new journal...

... arose when Günter Quast (CMS) gave an inspiring talk on the underestimated rôle of HEP Computing versus theory and experiment, at a particle physics conference in 2013.

Since 2015: HEP Software Foundation: " [...] coordination and common efforts in HEP software and computing internationally."

From many discussions emerged the need for a physics-driven journal:

- career paths for physics students/graduates working in HEP Computing
- publications: too much IT to be suitable for physics journals, too specific for most IT journals. Also different publication habits in hard sciences and computer science.
- positive feed-back loop on the dynamics and visibility of a community
- similarities with accelerator physics: most is published in proceedings with only one strong journal available: PRAB.

## Requirements + journal title

- Peer-reviewed journal, with an editorial board of physicists working in or closely related to IT
- Journal requires a basic IF but otherwise editorial policy geared towards the community needs: the journal should be inclusive and place selectivity in favor of optimizing any journal metrics only second.
- No proceedings

Where does the title come from? From HEP Computing to Big Science ...

Final decision: broader title (once it is fixed, it is hard to change) but narrower aims and scope (which can be more easily adapted)

## Aims ...

This peer-reviewed journal is dedicated to the publication of high-quality material originating from the collective effort by the scientific community to address the special and ever more demanding **computing and software needs of the future**. At its core will be particle, astro-particle and nuclear physics, as well as observational astronomy and cosmology, or high-brilliance light sources - fields in which experimental research is increasingly organized in large and global collaborations around **large-scale instruments with huge output of data**, and typically operating at the **very frontier of energy, intensity and detector technology**.

Facing similar challenges ranging from data reduction, via data sharing, to increasingly data-driven modeling of different facets of the same physical universe, the scientific community requires **fundamental and novel concepts for large-scale and collaborative computing and software development**, as well as novel algorithms and techniques for data processing.

## ... and scope

- > **infrastructures** for large-scale, high-throughput computing
- > related **software** and development infrastructure
- > **middleware** development
- > data **processing, hosting and sharing**
- > novel **algorithms** for efficient data reconstruction and filtering
- > software **benchmarking** and performance assessment
- > **frameworks** and software integration
- > online/offline **data quality** monitoring
- > distributed **data analysis**
- > **deep learning** algorithms
- > event and object **classification**
- > data **visualization**
- > **event generation** and **detector simulation**


## article types

- research articles presenting new and original results
- review papers (including white papers),
- advanced, self-contained tutorials,
- documentation papers with the explicit aim to collect and combine knowledge spread over many internal documents to foster proper technology transfer.
- no proceedings

## current status

Editors-in-Chief: Volker Beckmann (CNRS), Markus Elsing (CERN), Günter Quast (KIT)

Journal Data Policy:  
Type 2



The screenshot shows the journal's website interface. At the top, there is a blue navigation bar with a magnifying glass icon and the text "Browse Volumes & Issues". Below this, the main content area displays "Volume 1, Issue 1, December 2017" and the ISSN numbers: "ISSN: 2510-2036 (Print) 2510-2044 (Online)". A section titled "In this issue (4 articles)" lists the following:

- Original Article**  
**Learning Particle Physics by Example: Location-Aware Generative Adversarial Networks for Physics Synthesis**  
Luke de Oliveira, Michela Paganini...  
» Download PDF (4732KB) » View Article Article:4
- Editorial**  
**CSBS Editorial**  
Volker Beckmann, Markus Elsing, Günter Quast  
» Download PDF (472KB) » View Article Article:3
- Original Article**  
**FastBDT: A Speed-Optimized Multivariate Classification Algorithm for the Belle II Experiment**  
Thomas Keck  
» Download PDF (3278KB) » View Article Article:2
- Original Article**  
**HEPCloud, a New Paradigm for HEP Facilities: CMS Amazon Web Services Investigation**  
Burt Holzman, Lothar A. T. Bauerdick

On the right side of the page, there is a vertical banner for "Computing and Software for Big Science" with a blue and red background.