

# Towards the FTK-IAPP web page

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# The FTK web page

- **At INFN Pisa**

- For now under my home area there
- [http://www.pi.infn.it/~kordas/FTK\\_iapp/index.html](http://www.pi.infn.it/~kordas/FTK_iapp/index.html)
- Will organise it in the next days and release it to you for ~1 week for comments
  - Need pointers/photos to each one of you
  - And need to review the content/organisation
- Then release the first public version and add things as we go along

# FTK - Fast Tracker for Hadron Colliders

An FP7 IAPP project (February 1, 2103 - January 31, 2017)

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This project aims to develop an extremely fast but compact processor, with supercomputer performances, for pattern recognition, data reduction, and information extraction in high quality image processing.

The proposed hardware prototype features flexibility for potential applications in a wide range of fields, from triggering in high energy physics to simulating human brain functions in experimental psychology or to automating diagnosis by imaging in medical physics. In general, any artificial intelligence process based on massive pattern recognition could largely profit from our device, provided data are suitably prepared and formatted.

The first goal consists in demonstrating the system can perform online track reconstruction of full events at the highest luminosities of the LHC and SLHC) at CERN, beyond the limits of any existent or planned device and despite the overwhelming confusion due to the very high track multiplicity and the exceedingly large event pile-up.

With this goal we participate to the construction and the test for an high precision real-time tracker built for the ATLAS experiment: the Fast Track (FTK) processor. FTK can improve the capability of the ATLAS detector to select interesting events reach of heavy leptons or quarks within the enormous LHC background. It uses FPGA and ASIC chips to implement, real-time, complex track reconstruction algorithms. The track's trajectories are reconstructed in 3D, in few dozens of microseconds and the quality of the parameters is almost offline. FTK will increase the ATLAS discovery capability.

In parallel we will pursue challenging R&D & new real time computing ideas for more complex applications. A new industry-academia cooperation will reinforce the FTK team making it suited for such applications. The knowledge transfer will significantly increase the research quality and overall RTD capability and competitiveness of the partners, opening new scientific directions for our technology dissemination.

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Participants (2 SMEs and 4 Academic Institutions):



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