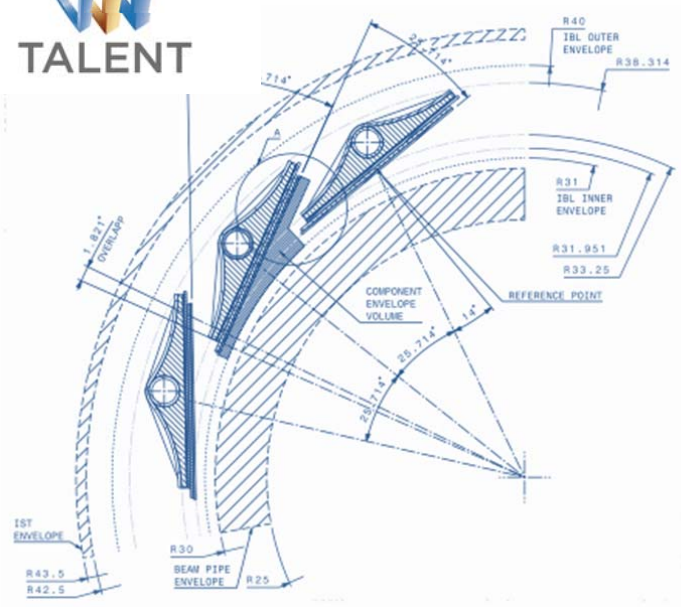
The TALENT Marie Curie Initial Training Network

Training for cAreer deveLopment in high-radiation ENvironment Technologies



TALENT aims at career development of young researchers in the field of instrumentation for radiation detection. It pilots the development of new state-of-the-art technologies for a new precision pixel detector for the ATLAS experiment, the Insertable B-Layer detector (IBL), and for future precision tracking detectors. The project strengthens the co-operation between research and multidisciplinary industry in the fields of advanced radiation sensors, fast and low power consumption read-out and data acquisition electronics, new cooling technologies and ultra light mechanical support structures.

TALENT technologies in a nutshell

During the next years, new technical solutions are required to upgrade or construct new infrastructures and detectors for CERN's Large Hadron Collider (LHC) experiments. Running the research facilities at increased intensity levels, pose a need to significantly improve the detector technologies mainly due to the 10 fold increased radiation level and data volume.

Answering these challenges require vigorous industry collaboration and research on:

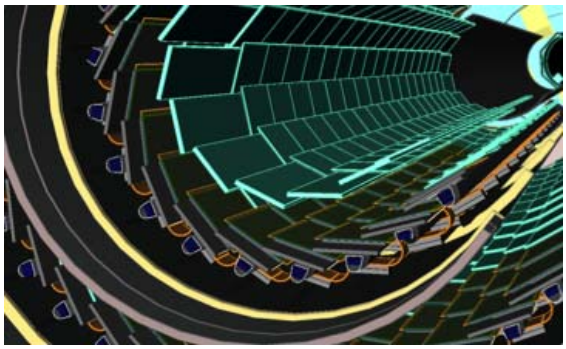
- Radiation-hard precision pixel sensors
- Radiation-hard high-density electronics and interconnection technologies
- New mechanical integration methods for light-weight support and cooling systems
- Detector performance and system integration

The aim of TALENT is to enhance interaction between European stakeholders to significantly increase the RTD efficiency by finding new technical solutions and producing affordable high performance detector modules in European industry.

TALENT has a special focus on dissemination, knowledge transfer and external research funding.

Benefits

- 100% paid fellows for 3 years
- Joint R&D projects
- Strengthened position in research and instrumentation supply chain



3D view of the IBL inside the ATLAS Pixel detector

Impact

- It furthers the career development of early stage researches and increases the amount of skillful labor on the European market.
- TALENT increases the competitiveness and visibility of European research and industry e.g. by enhancing the communication in the detector module supply chain and detector system construction.
- It boosts research and development in the field of advanced radiation detectors, new electronic-sensor integration methods and mechanical structures leading to efficient detector technologies applied in research and industry.

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Project Duration

January 1, 2012 until December 31, 2015

TALENT Network

2 Research facilities, 7 Universities, 8 Industrial partners

CERN, Switzerland
NIKHEF, Amsterdam, The Netherlands

Wirtschafts Universität Wien, Austria
Universität Bonn, Germany
Bergische Universität Wuppertal, Germany
Institute de Fisica d'Altes Energies, Spain
Université de Genève, Switzerland
University of Oslo, Norway
Centro Nacional de Microelectrónica, Spain

CiS Forschungsinstitut für Mikrosensorik und Photovoltaik GmbH, Germany
Atostek Oy, Finland
Fraunhofer IZM, Berlin, Germany
IBA Dosimetry GmbH, Germany
Composite Design SA, Switzerland
Bgator Oy, Finland
CIVIDEC Instrumentation GmbH, Austria
A.D.A.M SA, Switzerland

Fellow Positions

15 early stage researchers with a fellowship of 3 years
2 experienced researchers with a fellowship of 2 years

Applied physics – Electronics - Mechanical engineering - Software engineering - Economics

Research fields

Radiation-hard precision pixel sensors
Radiation-hard high-density electronics and interconnection technologies
New mechanical integration methods for lightweight support and cooling systems
Detector performance and system integration
Dissemination, knowledge transfer and external research funding

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Network Funding

Euro 4.5 million
European Commission, FP7 Marie Curie Action

www.cern.ch/talent/