

**ELPH seminar**

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**INSTRUMENTATION TECHNOLOGIE**



日時: **2020年2月25日(火) 15:30 ~**

場所: **電子光理学研究センター 三神峯ホール**

題目: **AN OVERVIEW OF BEAM DIAGNOSTICS AND  
READOUT ELECTRONICS FOR PARTICLE  
ACCELERATORS (ビーム診断機器開発について)**

**Abstract:** Around the world there are more than 40.000 particle accelerators, used for many different applications. All these machines have different sizes, technologies, requirements and challenges, but one thing is common: they all need beam diagnostics. Beam diagnostics are the ‘eyes’ of the machine, they allow the operators to see the properties and the behavior of the beam: without them we would be blind, and the understanding and optimization of the accelerator operations would be hard to achieve. Another important element of these machines is the acceleration process which takes place inside of the accelerating cavities: understanding and controlling the field in those structures is of vital importance for achieving the desired particle energy.

All these systems usually consist of two main parts: the sensor or probe, which is usually a mechanical part which interacts directly or indirectly with the beam, and the readout and processing electronics which measure RF signals and current produced by the sensors, and in case it is needed, generate a feedback signal.

In this context, Instrumentation Technologies is a global company operating for more than 20 years in the field of readout electronics used in particle accelerators, and its instruments are world-wide known with the brand name Libera. Each instrument is developed in cooperation with the end-users, in order to match the requirements and solve the challenges of different types of machines: from electron synchrotrons to proton LINACs, from Free Electron Lasers to Particle Therapy. In this brief overview, the main applications will be introduced as well as the technology and data processing techniques implemented inside of the instruments.