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## POZVÁNKA

na 293. seminář ÚTEF ČVUT v Praze  
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# Silicon Detectors: 60 years of innovations

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**Abstract:** The first demonstration of a semiconductor particle detector in 1944 was soon followed by intense efforts, based on rapidly evolving purification technologies for germanium and silicon. These materials created an innovation in compact energy measurement of ionizing nuclear particles. Around 1960 the first practical silicon devices allowed measurements at room temperature. From then on, during 60 years a succession of innovations in materials, geometry, processing technology, system architecture and signal readout electronics has led to widespread use of silicon detectors in experiments, materials analysis and medical imaging. These devices obviously deal with single particles and light quanta, providing extreme sensitivity, in comparison with classical chemical methods. While successful in nuclear physics, at first there was little use of silicon detectors in particle physics, with bubble chambers and later the wire chambers stealing the show. Belatedly, thanks to innovations at CERN and by other teams in elementary particle physics worldwide, the segmented silicon pixel and microstrip detectors now made their comeback in the LHC, allowing 40 million frames per second to be recorded, 7 orders of magnitude more frequent than photographic exposures in bubble chambers around 1975. The SiO<sub>2</sub>-based micro- and nano-electronics technology has been the basis for much of the recent innovations. In return, it is worth noting that nanoelectronics would not exist without the precision accelerators used for implantations of various species of ions into the silicon crystal. Finally, development opportunities are discussed for future physics applications.

Seminář se bude konat v úterý 8. listopadu 2016 ve 14 h  
v zasedací místnosti ÚTEF ČVUT, Praha 2 - Albertov, Horská 3a/22.

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