



ČESKÉ VYSOKÉ UČENÍ TECHNICKÉ V PRAZE  
ÚSTAV TECHNICKÉ A EXPERIMENTÁLNÍ FYZIKY

128 00 Praha 2 - Albertov, Horská 3a/22  
tel.: 22435-9391, 9290; fax: 22435-9392



## POZVÁNKA

na 297. seminář ÚTEF ČVUT v Praze  
pod záštitou Československé sekce NPSS IEEE

# Miniaturized X-ray telescope for VZLUSAT-1 nanosatellite with Timepix detector

Tomáš Báča

FEL, ČVUT

**Abstract:** We present the application of a Timepix detector on the VZLUSAT-1 nanosatellite. This project aims to verify the practicality of the detector in conjunction with 1-D Lobster-Eye optics to observe celestial sources between 5 and 20 keV. A modified USB Lite interface is used for low-level control of the Timepix. An additional 8-bit Atmel microcontroller is dedicated for commanding the detector and to process the data onboard the satellite. We present software methods for onboard post-processing of captured images, which are suitable for implementation under the constraints of the low-powered embedded hardware. Several measuring modes are prepared for different scenarios including single picture exposure, solar UV-light triggered exposure, and long-term all-sky monitoring. Following up VZLUSAT-1 project are NASA sounding rocket experiments. We aim to test a larger telescope (approx. 1 m focal length) together with Timepix detectors. Sounding rockets provide in-situ measurement platform, which allows 5-minute experiments with data recovery. We present results of preliminary experiments conducted at Pennstate University in 50 m long vacuum tunnel.

Seminář se bude konat 10. 01. 2017 ve 14 h  
v zasedací místnosti ÚTEF ČVUT, Praha 2 - Albertov, Horská 3a/22.

Dr André Sopczak  
tajemník semináře

Doc. Ing. Ivan Štekl, CSc.  
ředitel

Ing. Jan Žemlička  
předseda NPSS, ČS IEEE

**NUCLEAR & PLASMA SCIENCES SOCIETY CHAPTER**

IEEE Czechoslovakia Section  
<http://www.ieee.cz/en/nps>

