BRNO UNIVERSITY OF TECHNOLOGY

Ionizing radiation R&D at DREL

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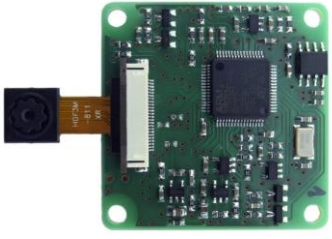
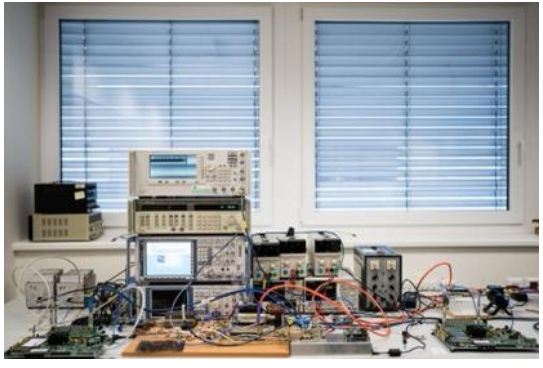
FACULTY OF ELECTRICAL ENGINEERING AND COMMUNICATION
department of radio electronics

Department of Radio Electronics

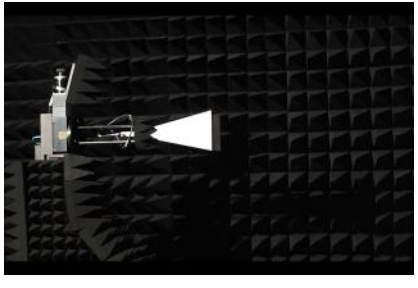
- Applied electromagnetics
- Electronics for space systems
- Mobile wireless communications
- Optical communications
- Radio frequency and free-space optical systems
- **Special electronics and embedded systems**





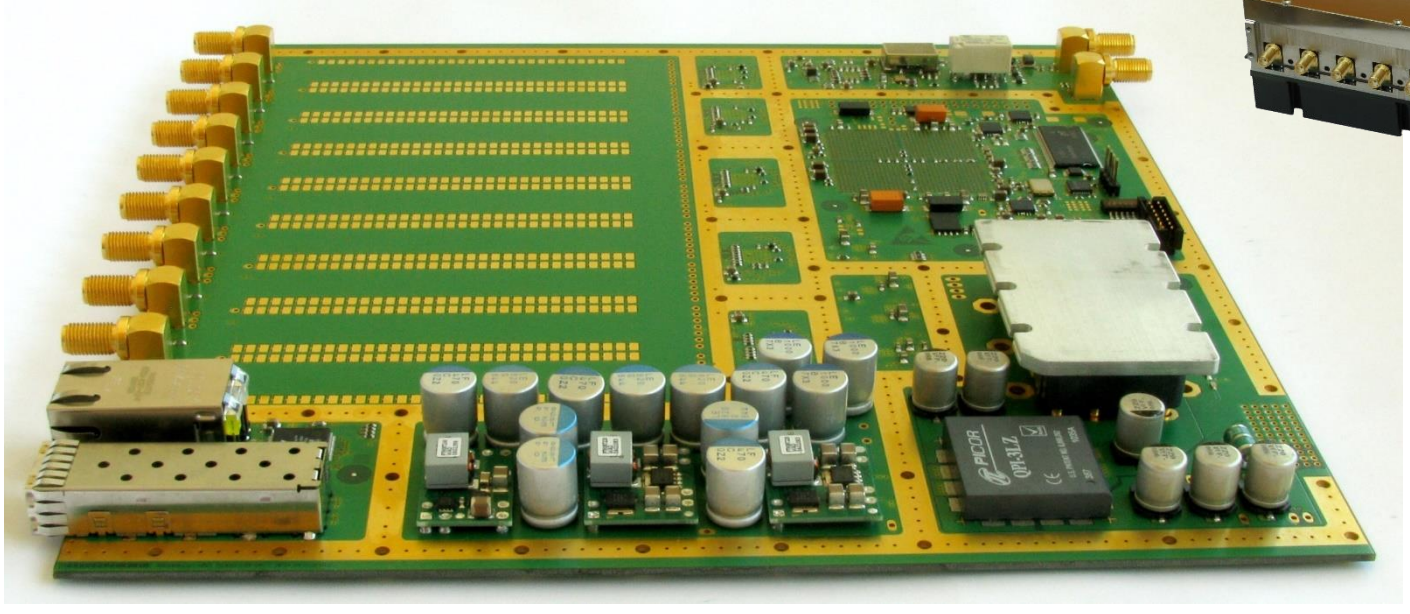
Capabilities, facilities

- Oscilloscopes (up to 4 CH @ 20 GHz), VNA (up to 110 GHz)
- Fast wideband digitizers (RF)
- 2x anechoic chamber (antennas and EMC)
- Optical lab (free-space, fiber)
- DSP and Machine-Learning know-how
- AmBe neutron source (UEEN, doc. Katovský; A ~ 90 GBq, n ~ 5e10^{6} s^{-1})

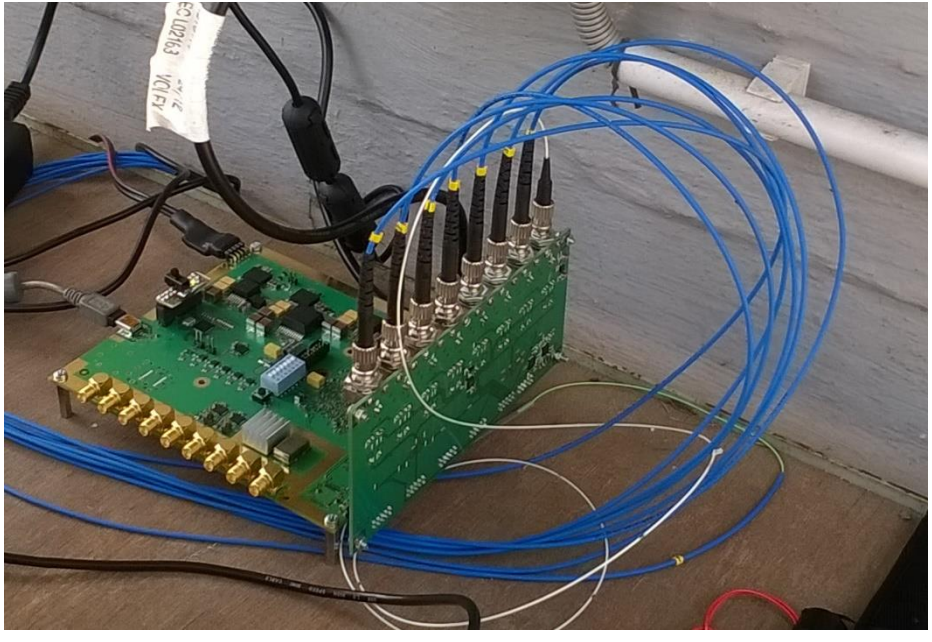
Products

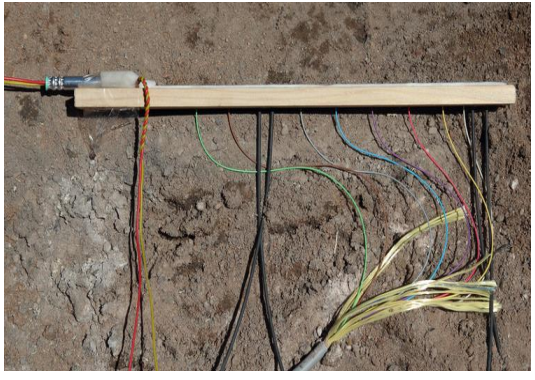
- Fast, precise digitizer for PCL system



Products

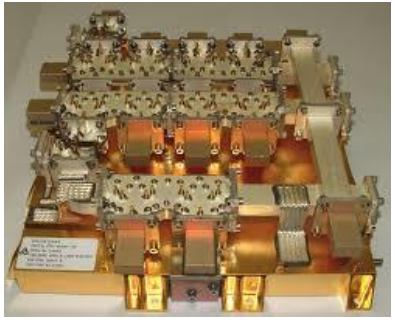
- Velocity of Detonation analyzer (OZM)

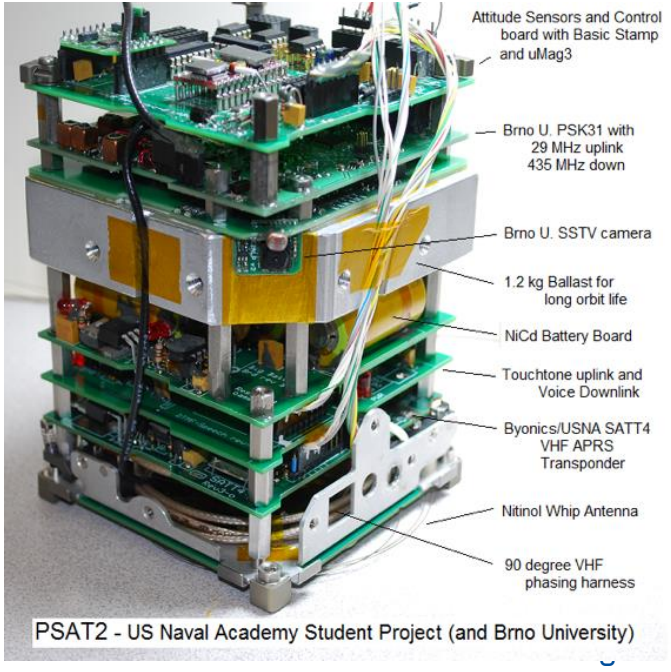




Products

- Rangefinder with semiconductor photomultiplier (MEOPTA)
- Fiber optics vibration detection system (security)
- Free-space photonic link (AV ČR)
- Satellite communication subsystems (ESA, Honeywell)





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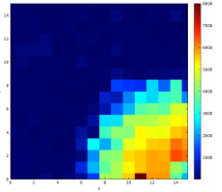
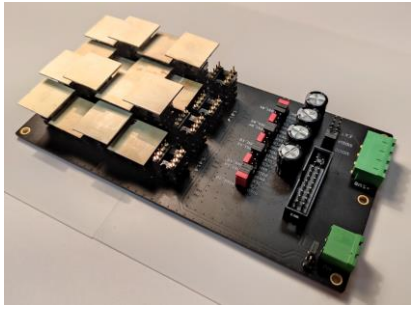
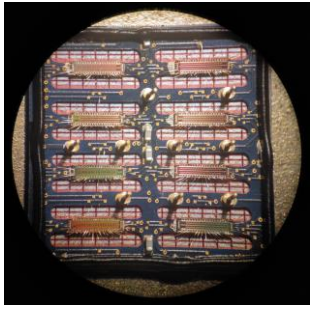
Projects related to ionizing radiation

- FD-11 digitizer redesign (VF a.s.)
- FD-23 digitizer (SGN-02; VF a.s.)
- Proportional detector - experimental setup (detector, amplifier, digitizer)
- Pixel detector interface system (PHpix; FJFI ČVUT, UJP Praha)

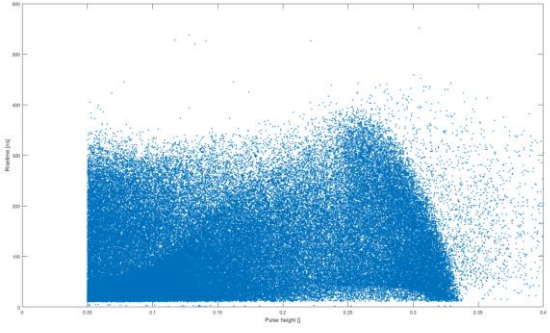


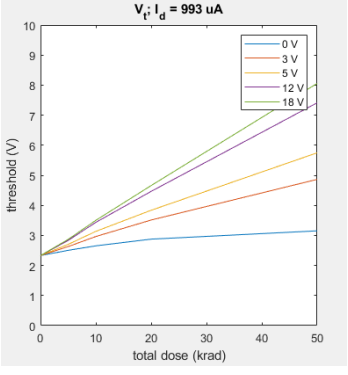


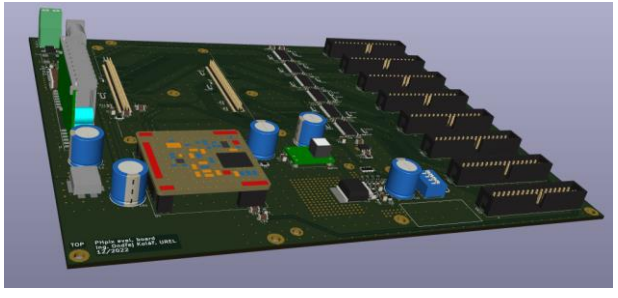


Ongoing Projects

- **Marek Honek** (PhD): Radiation hardness of semiconductor devices
- **Ondřej Kolář** (PhD): Proportional detectors – new amplifier, pulse classification (machine learning), detector modelling / simulation
- **Michal Kubíček** (for UJP): Pixel detector interface system
- **Jan Král** (for all): Coordination, expert assistance







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