

## **Photon-counting detectors in pre-clinical & m-CT imaging - benefits and challenges**

*Martin Pichotka*

Medical Center – University of Freiburg, Department of Radiology, Medical Physics Division, AMIR Core Facility

Following years of relentless efforts by a dedicated scientific community, photon-counting detectors (PCDs) are by now approaching technological maturity. With first scanners equipped with this technology being operated in clinical routine, benefits in terms of spatial resolution, noise suppression and improved spectral performance over DECT have been widely published in the recent past.

However, due to their technological complexity and particular characteristics, which differ strongly from previous generations of X-ray detectors, PCDs remain a challenge for system developers and methods developers alike, requiring further research to realize the full potential of the technology.

In our presentation we will address the current state of PCD technology, as well as some remaining challenges. A particular focus will be put on high resolution X-ray imaging using PCDs. Here fabrication dependent limitations on the pixel size (currently ~50micron) only appear to be the limiting factor.