

## 4th Jagiellonian Symposium on Advances in Particle Physics and Medicine



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### **Key talk: Promising detector concepts to advance coincidence time resolution for time-of-flight positron emission tomography**

*Wednesday, 13 July 2022 10:35 (25 minutes)*

We are studying novel detection concepts to enhance coincidence time resolution (CTR) for time-of-flight (TOF) positron emission tomography (PET). In this short talk we will briefly discuss fundamental limitations on PET CTR using scintillation detectors and describe new configurations and electronic readout designs that attempt to address those constraints. We also concisely describe an innovative, non-scintillation-based, fast detection concept, which borrows concepts from the field of optics, that could in theory achieve  $\sim 1$  ps CTR. If successful, these technologies will lead to next generation systems that enhance TOF-PET's ability to visualize and quantify disease.

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**Presenter:** Prof. LEVIN; STANFORD UNIVERSITY AND UNIVERSITY OF LEEDS, USA, Craig

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