

PARTICLE PHYSICS IN PROMOTING INNOVATION



HELSINKI
INSTITUTE OF
PHYSICS

FPS Particle Physics Day 24.11.2022

D.Sc.(Tech.) Eija Tuominen, director of HIP/UH Detector Laboratory

WHY INNOVATION ACTIVITIES?

Strategic plan of the University of Helsinki 2021–2030: With the power of knowledge – for the world

“We will meet the knowledge needs of our stakeholders in order to solve societal issues. Solid and open research as well as interaction with cooperation partners yield wide-ranging added value to society as a whole. Key factors in this include liberal adult education that draws from research, citizen activities and art as well as innovations and results with commercial potential and business activities.”

(<https://www.helsinki.fi/en/about-us/strategy-economy-and-quality/strategic-plan-2021-2030/strategic-plan-of-the-university-of-helsinki>)

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INNOVATIONS BASED ON PARTICLE DETECTORS

- **HIP CMS Tracker Project** team has developed radiation hard detector technologies for the upgrades of particle physics experiments since 2000 (with project leaders **Eija Tuominen, Jaakko Härkönen, Panja Luukka**).
- Particle physics detector technologies are applicable e.g., for medical imaging and nuclear safety.
- **Business Finland** (former TEKES) has special funding instruments for the commercialization of research innovations.
- In addition, **Academy of Finland** has had special programs to promote detection technologies.

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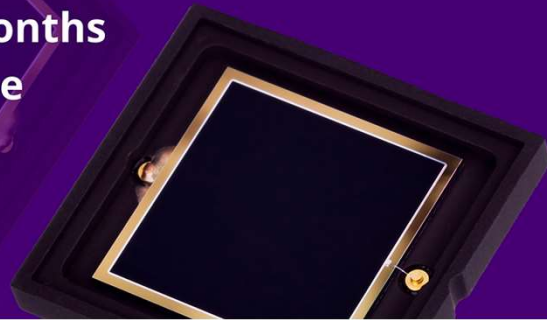


SOME DETECTOR INNOVATION PROJECTS

- 2016 – 2017, TEKES (Finnish Funding Agency for Innovation): “Aalto-HIP-TUTL Black Photodiodes” → EIFys Oy (PI/HIP **Eija**, PI/Aalto prof. **Hele Savin**)
- 2018 – 2022, Academy of Finland: HIP-STUK-Aalto-LUT “Multispectral photon-counting for medical imaging and beam characterization” (PI **Panja**)

EIFys has raised €6M in last 10 months to ramp up production for the growing wearable market.

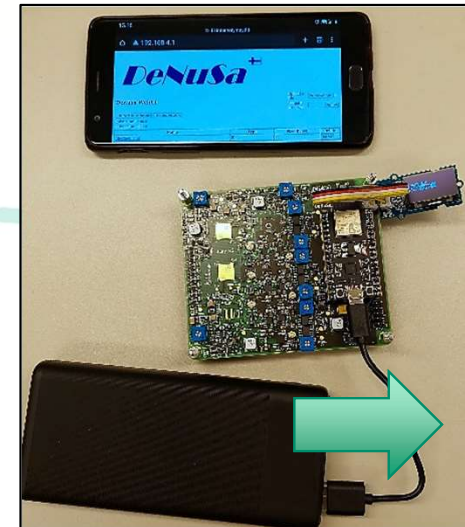
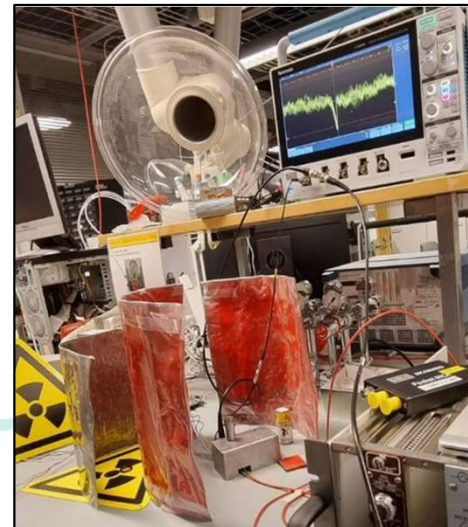
<https://www.elfys.fi/>



- 2021 – 2023 Business Finland Research-to-Business “HIP-LUT Detector for Nuclear Safety, Decommissioning and Diagnostics Applications, DeNuSa”

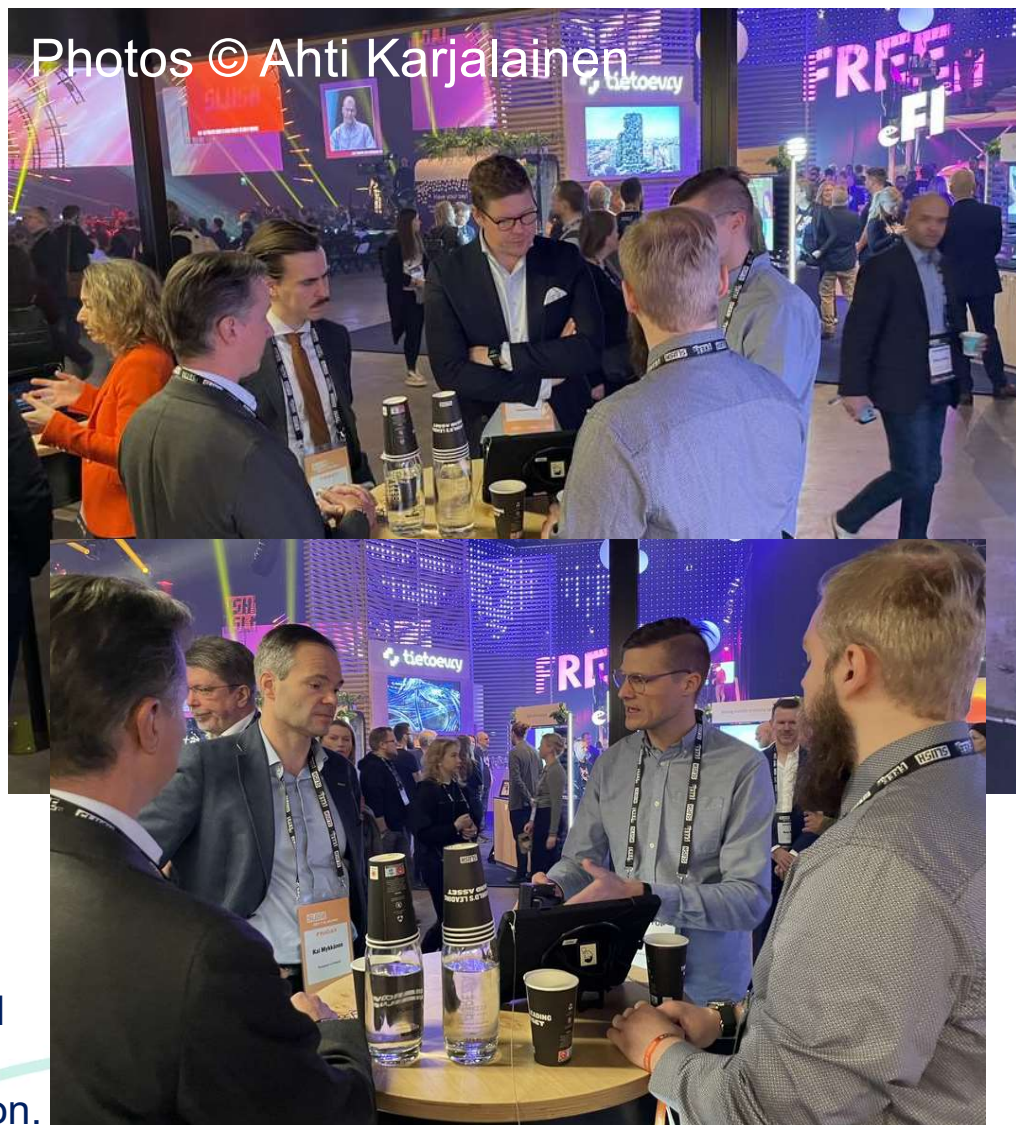
DeNuSa INNOVATION PROJECT

- *Detector for Nuclear Safety, Decommissioning and Diagnostics Applications*
- Business Finland / Research-to-Business **commercialization project** (40% commercial – 60% research)
- UH/HIP & LUT: **755,000 €** (60% - 40%), June 2021 – March 2023
- Based on the original innovation by **Jaakko Härkönen** (in memoriam), Panja & Eija
- The Team: PI/HIP **Eija**, PI/LUT - **Panja**, Project Manager **Aneliya Karadzhinova-Ferrer** & **Ahti Karjalainen**, Commercial Champion **Marko Arenius**, **Mika Väänänen**, **Mihaela Bezak**, **Mikko Pajula** & HIS Oy
- More info: <https://www.hip.fi/denusa/>





MPs Antti Lindtman (sd), Matias Mäkyänen (sd), and Kai Mykkänen (kok) were introduced to the excellence of particle physics and its instrumentation.



SUMMARY

- Universities encourage innovation and business activities.
- Instruments developed for particle physics experiments have applications e.g., in medical imaging and nuclear safety.
- More information and support:
<https://www.helsinki.fi/en/helsinki-innovation-services>

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Thank You.