

MuRay Tech GmbH

See more.

Know more.

Build better.

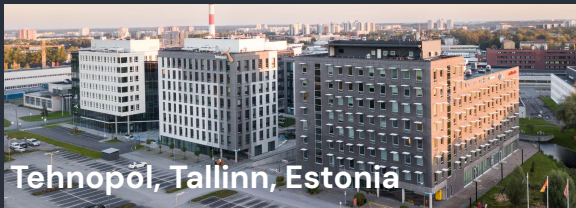
Dr Kristjan Pöder
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The company MuRay Tech

Building the world's first **Muon Beam Imaging** system:

- Laser Plasma Accelerator based muon-ray source
- Detector system for Muography
- AI-based 3D imaging and automated analytics



Andi Hektor, PhD
Co-CEO & Co-founder

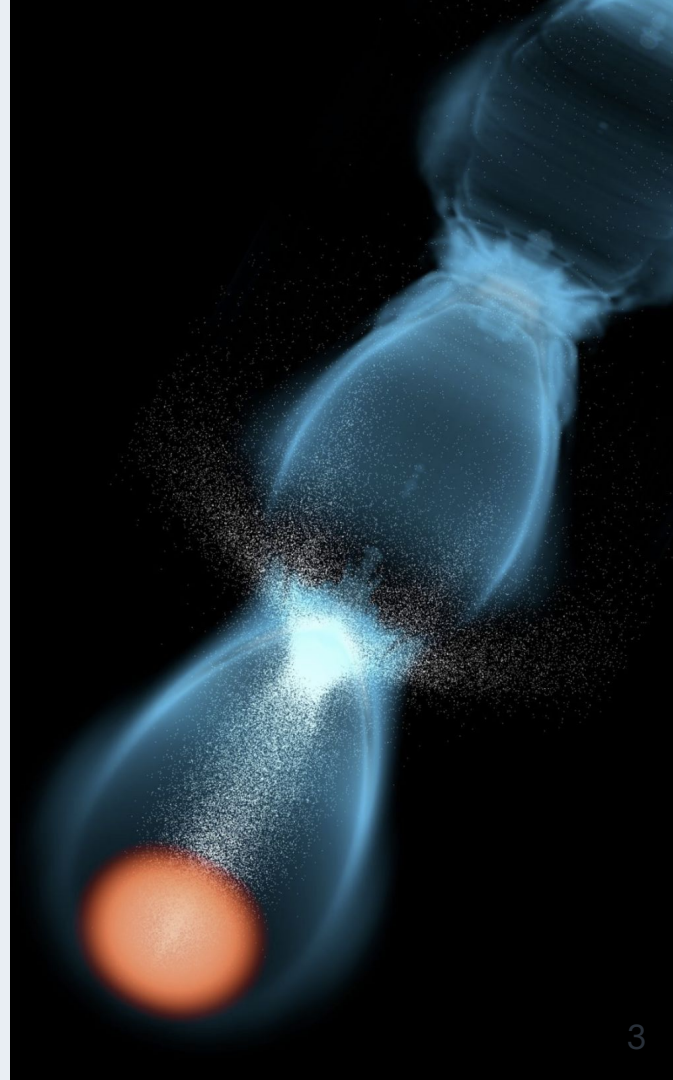
Kristjan Pöder, PhD
Co-CEO & Co-founder



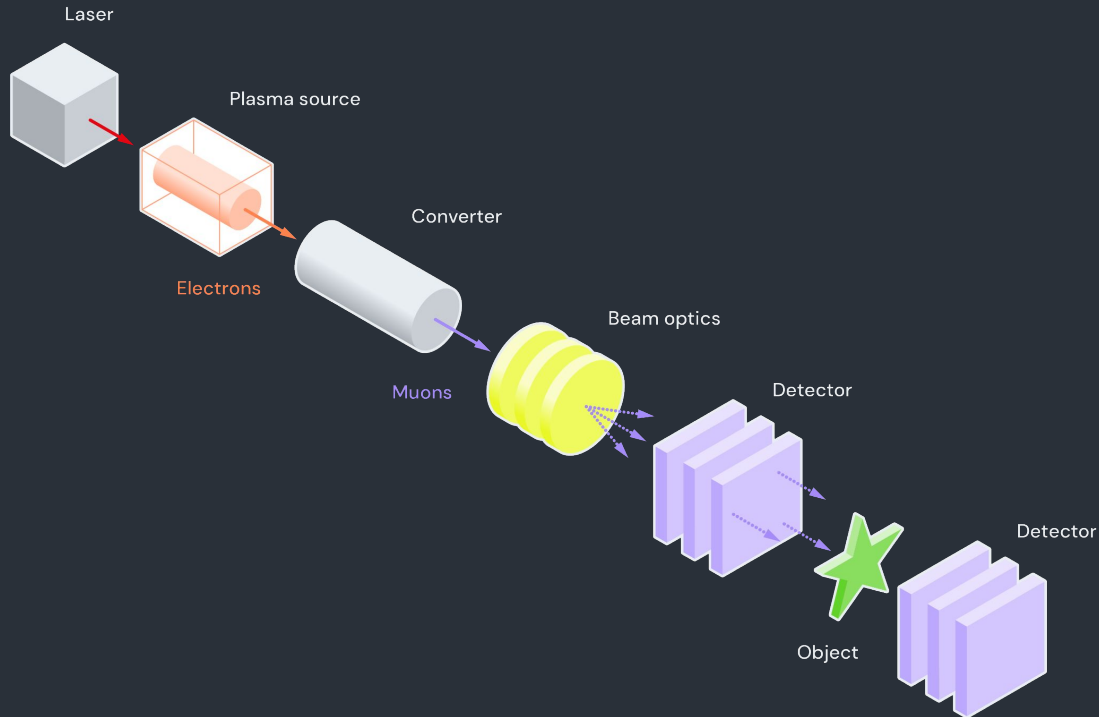
Cosmic-ray muons *versus* man-made ones

Cosmic-ray based muography is safe and passive, but...

- **Long imaging times:**
A few mm resolution needs a week of scanning time
- **Low spatial resolutions:**
It is difficult to achieve $<1\text{mm}$ resolution
- **Trouble with low-Z materials:**
Muon scattering angles are small at $\sim 4\text{ GeV}$

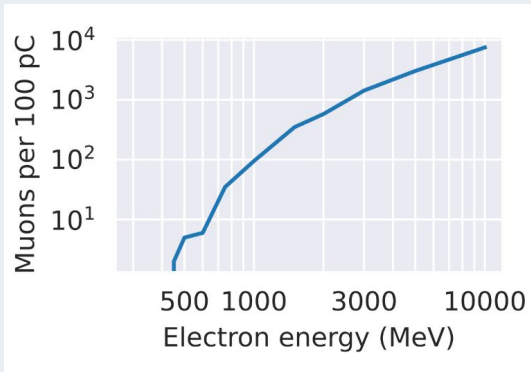
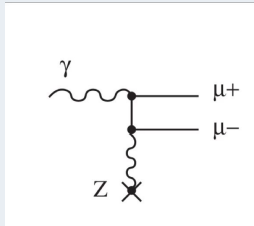


Muon Beam Imaging: Laser Plasma Accelerator + Muon Tomography

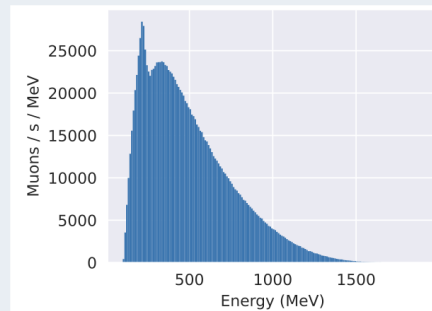
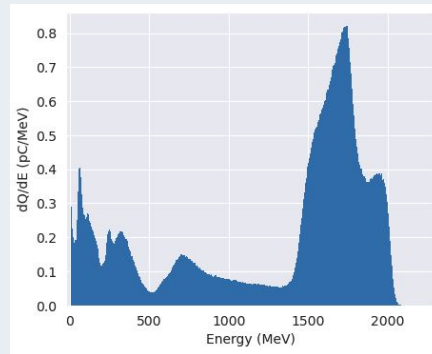


Laser Plasma Accelerator (LPA) driven muon source

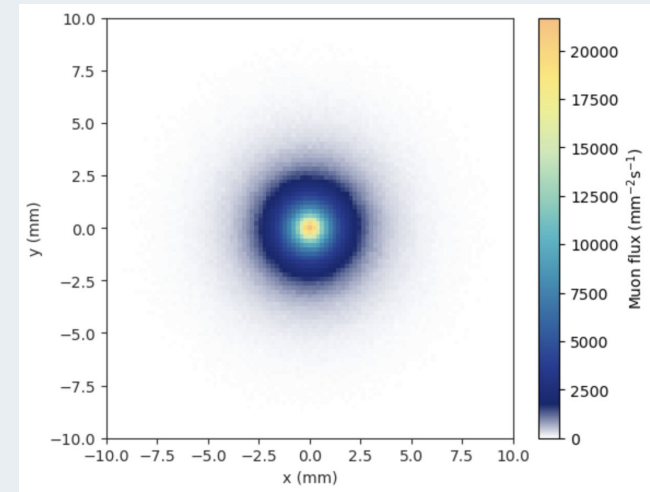
Muons are primarily created by Bethe-Heitler process



100TW lasers with HOFI-guiding can create 100s pC of charge, which can create 1000s of muons per shot.



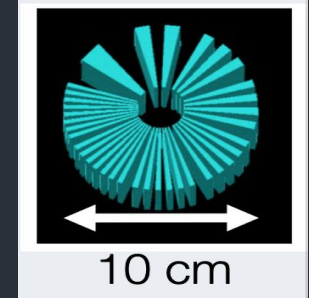
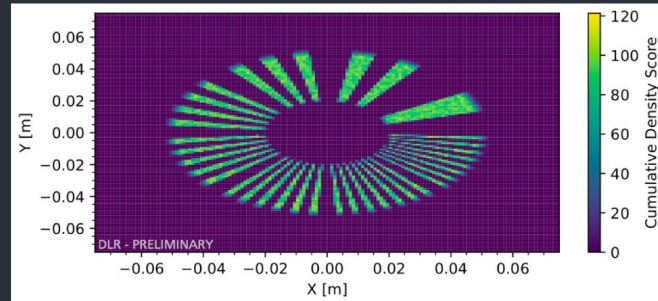
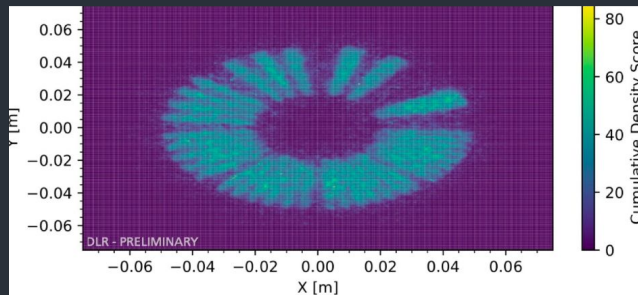
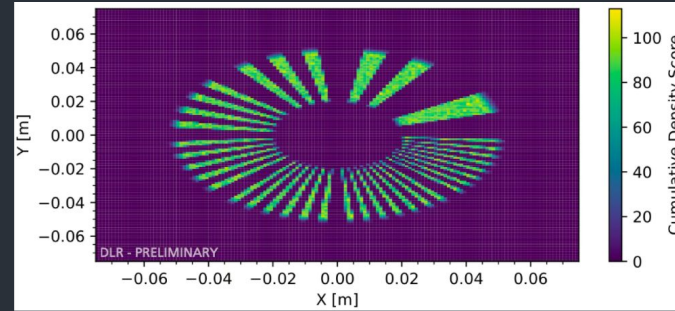
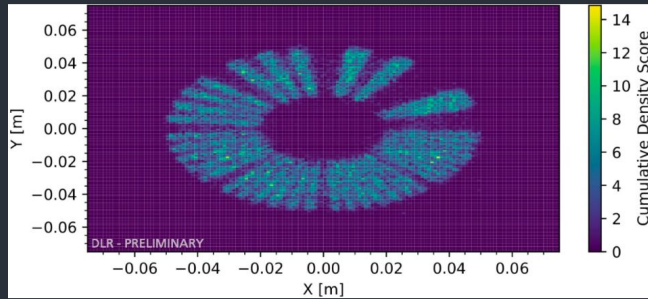
With upcoming 100 Hz laser system, the source could make 100 000s of muons per second



Muon-Beam-Imaging with LPA-based source

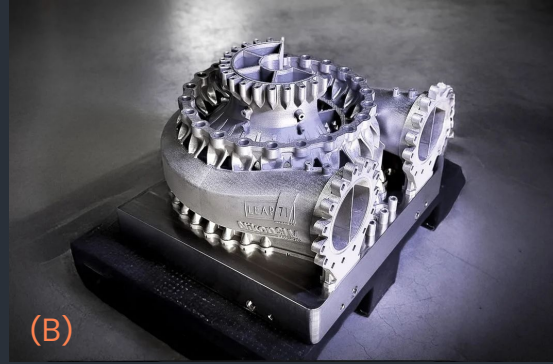
Cosmics: 14 hours

LPA: 1 minute



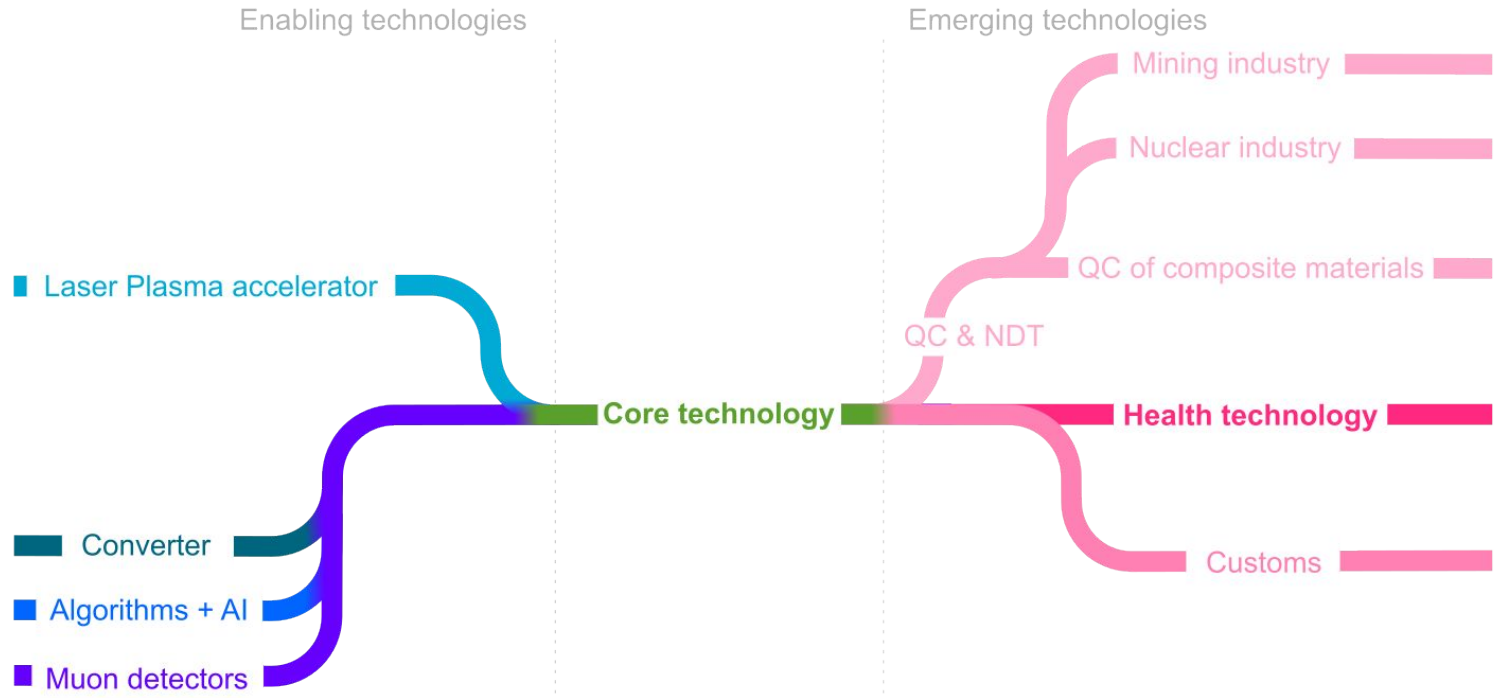
In collaboration with S. Barnes, J-M Alameddine, M Perezprada et al (DLR)

The world of metallic Additive Manufacturing (3D-printing)



- (A) Rocket engine with cooling channels
- (B) Element of the rocket engine
- (C) Gas turbine blades with cooling channels
- (D) World's largest metallic 3D-printer

Technology vision: The applications



Aggressive roadmap towards full-scale product

- **2026:** Muon source at the DESY PRIMA beamline + early muon detector
- **2027:** Proof-of-Concept projects with industrial partners
- **2028:** First tests with the LPA-based systems
- **2030:** First full-scale product: original LPA + muon detector

Rapid growth ahead – join us 🙌