



WP12.1 Kick-off meeting

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Sub-task 4: Accelerator imaging (ULANCS):

- This sub-task will explore innovation in the use of particle beams for imaging, in particular in the security and medical areas. The applications to be studied are X-ray cargo scanning and non-destructive testing, neutron sources for non-destructive testing, proton radiography, X-ray imaging of dense targets and compact Compton sources.
- 4.1 X-ray cargo scanning and non-destructive testing (ULANCS, RPS, NCBJ)
- 4.2 Neutron sources for non-destructive testing (DYN, CERN)
- 4.3 Proton radiography (ULANCS)
- 4.4 X-ray imaging of dense targets (AWE)
- 4.5 Compact Compton sources (TUE)

X-ray cargo scanning and non-destructive testing

- Existing field with key industrial players
- Based on brem. Sources of X-rays and emerging neutron sources
- What are the advances that will shape that market in the next few years?
- Is there any disruptive technologies?
- Are their challenges without solutions?
- Are there better ways of addressing the special nuclear material and nuclear resonance fluorescence applications?

 iFAST compact muon sources shrink enough to find an application. ³

Neutron sources for non-destructive testing

- New RFQ-based neutron sources have been developed and are being developed for applications
- What applications are there that this technology can target?
- Can the technology be improved?

Proton radiography (and other medical imaging)

- Full body imaging needs 350 MeV, can this be addressed without a separate machine?
- What other accelerator medical imaging applications should we consider? MeV photon CT?

X-ray imaging of dense targets

- I could tell you but I'd have to kill you!
- What can we say in this area?
- What are the future challenges?

Compact Compton sources

- New accelerators for Compton imaging
- How compact can these accelerators be
- Is scaling to high current possible (with an ERL)?
- What are the applications/market for these devices
- Can a user case be made for a facility?

Aims

- Identify challenges, R&D required and relevant projects M10
- Develop a roadmap to address these challenges M24
- Write a strategy document M40

Approach

- Broad workshop in year 1 with community
- Discuss with relevant industry
- Create a panel for writing the roadmap/strategy

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