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RadiaBeam Technologies, LLC is a high-tech company specializing in accelerator technology, instrumentation, and applications. The company was founded in 2004 as a spin-off of the UCLA Department of Physics and Astronomy with the mission of bringing high impact, innovative accelerator science concepts from lab to market. Today, RadiaBeam is an internationally-recognized supplier of high-quality accelerator systems and components, with a diverse product line that includes RF structures, magnets, diagnostics, complete accelerator beamlines, complete linac systems, OEM linac structures and betatrons. RadiaBeam also has an active research program focused on novel beam instrumentation, advanced accelerators and light sources, new commercial accelerator systems, homeland security applications, and novel manufacturing techniques.

In the area of border security, RadiaBeam provides standard linac and betatron X-ray sources for high-energy non-intrusive inspection. We are also developing several pilot inspection systems that implement novel adaptive-energy inspection methods:

- Adaptive Railroad Cargo Inspection System (ARCIS). This system is based on a multi-energy method utilizing a ramping-up energy packet of short x-ray pulses and utilizes a ramped energy source of packets of short x-ray pulses, a new type of fast X-ray detectors, and rapid processing of detector signals for intelligent control of the linac. The system will allow scanning with material discrimination for speeds up to 45 km/h and over a wide range of cargo thicknesses.
- Mobile Intelligent X-ray Inspection System (MIXI). MIXI relies on a similar concept as ARCIS, but utilizes a compact linac-based X-Ray source, which allows MIXI to be placed on a lightweight truck chassis.
- Inspection system with Miniaturized High Energy X-ray Source (MXS). MXS is a compact, high repetition rate linac-based X-ray source that can generate short (~100 ns) pulses with energies up to 9 MeV. The material discrimination algorithm is based on temporal separation of the Scintillation and Cherenkov signals.
- Multi-Energy Betatron-based Cargo Inspection System (MEBCIS) relies on an innovative technique of extracting two X-ray pulses with lower and higher energies within a single betatron acceleration cycle. The multi-energy betatron in conjunction with fast X-ray Scintillation-Cherenkov detector will allow a very compact inspection system with intelligent material discrimination.
- DeepBx: X-ray backscatter inspection with enhanced penetration and material discrimination, based on ramping-energy X-ray pulses and fast detectors. This enables a novel algorithm for image “peeling” to achieve deeper penetration and superior radiographic image quality (spatial resolution, layer and isolation contrast sensitivities).