



ASTROPHYSICS™

ADSA-CBP-01

Multi-View CT System (MVCT)

Cargo Skid Scanner

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About Astrophysics

- **Founded 2002 in City of Industry, California**
- **Present in over 100 countries with over 100 agents**
 - Offices in 6 US states, Lebanon, India, Philippines, Mexico
- **13 different X-ray tunnel sizes / 34 different models**
 - Energy Levels / Beam Orientations / Single View / Dual View / Mobility
 - Checkpoint, Hold Baggage, Cargo (TSA Capacity A,B,C)
 - Vehicle Screening & High Energy Container Scanners
- **19 qualified systems on TSA's Air Cargo Screening Technology List**
- **Install base > 20,000 units**
 - United Nations, US Army, Navy & Air Force, Federal Bureau of Prisons, Department of State & Energy, FBI, DHS ICE, Army National Guard, CA Court Houses...
 - Recent CBP installations & projects:
 - 76 X-ray systems at federal baggage inspection stations and int'l mail facilities





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Co-Workers

- **Acknowledgments:**
 - **ALERT DHS Center of Excellence**
 - Northeastern University
 - Michael Silevitch, John Beaty & Fernando Quivira
 - Boston University
 - David Castanon
 - **Funding & Support from DHS, S&T Directorate**
 - Explosives Division, Screening of Palletized Air Cargo Program



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So What? Who Cares?

- **Space:** Screening and detection of contraband in cargo skids at ports of entry
- **Problem:** Very challenging for non-invasive inspection methods
 - Currently requires break-bulk tear-down of skids for effective screening
 - High man-power requirements, slows commerce, costly exercise
- **Solution:** Full skid X-ray imaging with many-view transmission and volumetric (CT)
 - Operational cost savings from reduced break-bulk screening (less labor & time)
 - Cost-effective MVCT scanner hardware configuration
- **Results:** Demonstrated in government trials, 2017
- **TRL:** Production engineering, 1st deployments 2019
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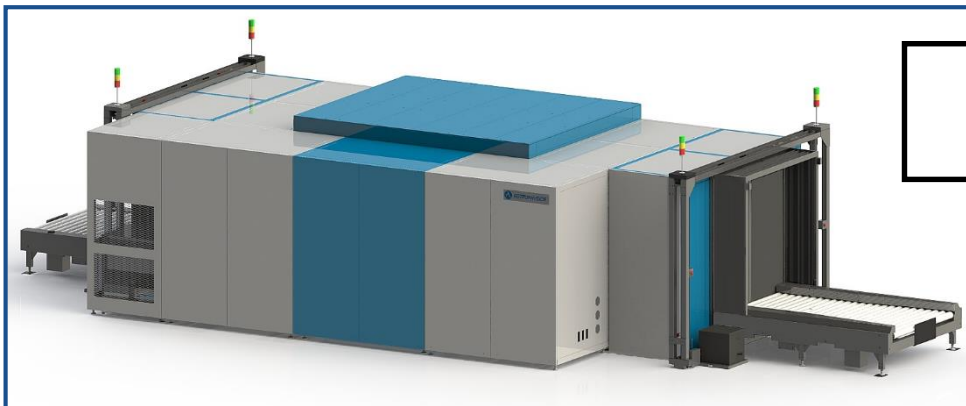




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MVCT Skid Scanner

- **“Dual function” X-ray transmission & (3D) CT system:**
 - **Multi-view linescan transmission** imaging with many views over 180 degrees
 - Single X-ray source, high-resolution detector arrays
 - Can operate as a “1st level” screening system at high throughput
 - Displayed as an intuitive rotating image (cf. current dual view technology)
 - **Computer Tomography (CT)** volumetric 3D imaging
 - Multi-pass translate-rotate CT of a full skid
 - True 3D image that can be sliced, rotated, panned & flipped
 - For primary screening or “2nd level” resolution of suspect items
- **Single operator and an automated screening process**



MVCT Air Cargo
Skid Screening System

Max skid: 122cm x 122cm x 165cm
(48" x 48" x 65")



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Summary

- **Astrophysics roadmap:**

- Production MVCT in development for Customs and Air Cargo applications
- 1st deployments anticipated in 2019
- Automated explosive threat detection under development
 - Exploits transmission and CT image datasets

- **Major Operational benefits:**

- Advanced screening, flexible & dynamically extendable scans
- Good operational throughput (comparable to existing 320kV systems)
- High kV X-ray generator to screen high density cargo skids

- **Strong return on investment**

- Substantial savings in screening labor versus break-bulk screening
- Streamlined screening process
- May allow screening of heterogeneous skids