Commercial 4K Superconducting Linacs

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www.niowaveinc.com

Commercial Uses of Superconducting Electron Linacs

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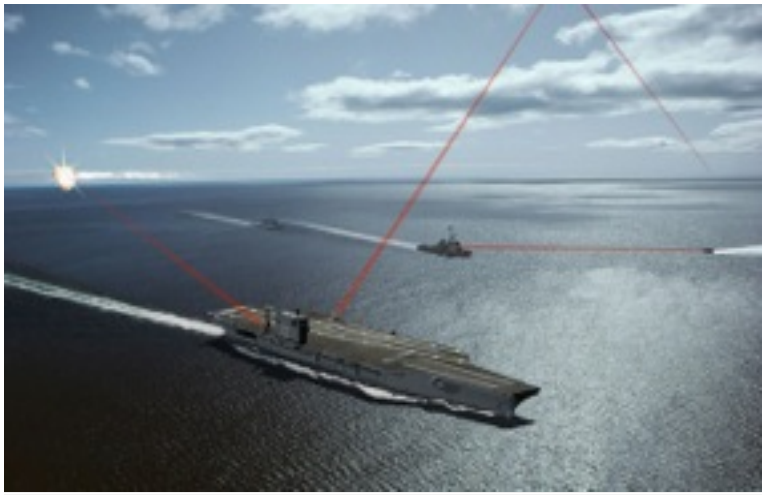

Free Electron Lasers

Radioisotope Production

High Power X-Ray Sources

Integrated Systems for 4 K Superconducting Electron Linacs

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RF electron guns

Solid-state and tetrode RF amplifiers (up to 60 kW)

Superconducting cavities and cryomodules

High-power couplers

Commercial 4 K refrigerators (rugged piston-based systems, 100 W cryogenic capacity)

Commercial 4 MeV FEL

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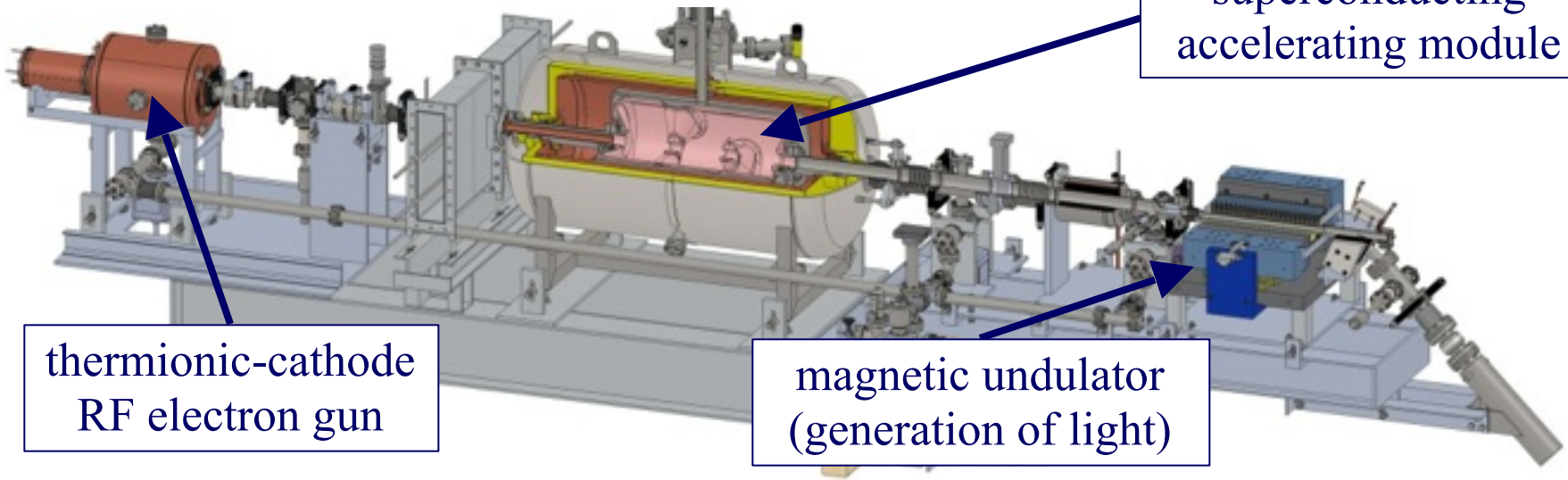
Niowave/NPS/STI have built a 4 MeV free electron laser

- installed in shielded tunnel at Niowave
- preparing for first tests in a super radiant THz mode
- T. L. Grimm, et al, "4K Superconducting Linac for Free Electron Lasers," FEL2013, New York, (2013) TUPSO23



Summary

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- Superconducting electron linacs are a prosperous and growing high-tech industry
  - Quarter wave guns
  - Medical radioisotopes
  - Free electron lasers
  - High power x-ray sources
  - Future: fast and thermal neutrons, Compton x-rays, photon activation analysis, wakefield accelerators, ultrafast electron microscopes, etc.
- Similar opportunities for commercial proton and heavy ion linacs are ready to be exploited