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## Worldwide industrial developments for compact accelerators based on the Nb<sub>3</sub>Sn superconducting radiofrequency (SRF) technology.

*Thursday, 7 July 2022 15:30 (15 minutes)*

Nb<sub>3</sub>Sn superconducting radiofrequency (SRF) cavities have the potential to expand new performance capabilities of particle accelerators for the benefit of both the fundamental science and the industrial applications, where potential applications among others include wastewater treatment and medical isotope production. For small-scale applications, Nb<sub>3</sub>Sn SRF creates the opportunity for a turn-key cryocooler operation instead of complex sub-atmospheric liquid helium cryogenic plants. The transition from cryogenic plant to a cryocooler operation reduces the footprint of the system, and substantially simplifies its operation and maintenance. With continued progress in the material development, Nb<sub>3</sub>Sn cavities have the potential to further reduce cryogenic losses and to eventually outperform current state-of-the-art niobium in energy gain by a significant margin. Small scale accelerators based on Nb<sub>3</sub>Sn are now moving towards the prototyping stage. We will discuss ongoing efforts towards the demonstration of Nb<sub>3</sub>Sn cryomodules.

### In-person participation

Yes

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