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Session 18: Innovation in the generation of neutrino beams

Targetry challenges for the generation of high intensity neutrino beams

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As future accelerator neutrino sources become increasingly powerful and intense, there is a pressing need to address the technical challenges presented by the required neutrino target facilities. Energy deposition from high intensity primary beam induces sudden heating (thermal shock) as well as micro-structural changes (radiation damage) in the target material. As higher intensities are desired for future neutrino sources, these effects have neared the limits of the currently utilized materials. Resulting shorter, or unpredictable, target lifetimes may threaten the efficiency of the high power neutrino sources, negating the gains in going to higher power. In addition, other challenges may limit neutrino source operation, such as heat removal, high activation of facility components and systems, and radiation accelerated corrosion. This presentation will review the state of currently operating neutrino facilities, highlight the progress of several R&D efforts towards meeting the targetry challenges, and project these experiences to the next generation of accelerator neutrino sources.