

Status of the Second Target Station Project with Target Systems Highlight

Monday, 28 October 2024 11:30 (25 minutes)

The Second Target Station (STS) project is an expansion to the existing Spallation Neutron Source (SNS) in Oak Ridge, TN. The project is at the end of the preliminary design phase. STS seeks to provide world leading peak cold neutron brightness to a suite of new instruments, eight of which are included in the project scope. SNS is currently in the final stages of the Proton Power Upgrade Project (PPU), which will leave the linear accelerator and accumulator ring capable of providing 2.8 MW delivered in micro-second long pulses at 60 Hz. The First Target Station (FTS) will accept a maximum of 2 MW, leaving power available for STS. Every 4th pulse from the accumulator ring will be directed to STS via a new beam transport line. Thus, STS will receive 700 kW at 15 Hz and the FTS will operate at 2 MW with an irregular 45 pulses per second. STS will achieve world leading peak brightness using the following ingredients: 1) compact, short, high net energy (46.7 KJ) pulses, 2) a compact rotating tungsten target with a low coolant volume fraction, and 3) closely coupled compact hydrogen moderators surrounded by water pre-moderator and beryllium reflector. This presentation will provide an overall technical description of the project and its status. Current design and major evolutions across all systems will be presented with a focus on Target Systems. Additionally, an index of spallation materials related challenges and achievements will be provided.

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Session Classification: Facility overview, updates and developments. Operational experience of targets, beam windows, cooling and ancillary systems

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