



Contribution ID: 29

Type: **Oral**

Monte Carlo optimization of a next-generation ultracold-neutron source

Wednesday, 18 October 2017 10:00 (25 minutes)

The TRIUMF Japanese-Canadian UCN Collaboration is planning a next-generation ultracold-neutron source. To maximize the number of ultracold neutrons available to experiments, Monte Carlo simulations of neutrons over a wide energy range are needed. Additionally, heat deposit due to neutron scattering, neutron capture, and gamma radiation is an important design parameter.

This presentation will show how we use simulation tools like Fluka, MCNP, and PENTrack to optimize the combination of neutron moderators and the geometry of the source.

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Session Classification: WeMo1

Track Classification: Simulation tools (Monte Carlo, finite elements, ...)