Contribution ID: **417**   Type: **Oral Presentation**

MU*STAR: A MODULAR ACCELERATOR-DRIVEN SUBCRITICAL REACTOR DESIGN

Wednesday, 31 July 2019 17:20 (20 minutes)

Mu*STAR is an accelerator-driven molten-salt subcritical reactor based on recent superconducting RF technological breakthroughs that allow a highly efficient and powerful proton accelerator to drive a spallation target inside a graphite-moderated, thermal-spectrum reactor. The additional spallation neutrons can be used to overcome the absorption of neutrons by fission products to allow a deeper burn than is possible with critical reactor designs. Simulations have shown that as much as seven times the energy that was extracted from used fuel from light water reactors can be produced by this method before the accelerator demands significant power from the reactor. Once the fuel rods have been converted from oxide ceramics to fluoride salts, in a process that is proliferation resistant (not chemical reprocessing), the fuel can be burned for centuries without increasing its volume while reducing its radio-toxicity.

Primary authors: Prof. CUMMINGS, Mary Anne (Muons, Inc.); JOHNSON, Rolland (Muons, Inc.); ROBERTS, Tom (M); ABRAMS, Robert (Muons, Inc.)

Presenter: Prof. CUMMINGS, Mary Anne (Muons, Inc.)

Session Classification: Accelerators

Track Classification: Accelerators