SEMINAR NOTICE

Department of Physics and Engineering Physics
University of Saskatchewan

SPEAKER: Dr. Raymond Golingo
Fuse Energy Technologies Inc,
Montreal, QC

TOPIC: ***Flow-Through Z-Pinch Research at Fuse***

DATE: November 30th, 2021

TIME: 3:30-4:30 p.m.

ABSTRACT:

Join Zoom Meeting:
https://usask-ca.zoom.us/j/96818469630?pwd=aGpiVUtjcEJmZzBqclZ2S042eGpiQT09

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Meeting ID: 968 1846 9630
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Fusion reactors have the potential of becoming the ultimate green energy source by generating electricity from common elements that are found abundantly in nature. A stable Z-pinch (a cylindrical plasma column with an axial current) has the potential of becoming the most practical fusion core to build. “Stationary” Z-pinches are known to be unstable to sausage and kink modes, such that equilibrium is disrupted in about 100 ns. However, “Flow-through” Z-pinches were observed to persist for about 100 us in the late 1960’s. The stabilizing mechanism was identified as sheared axial flow in the late 1990’s by the ZaP experiment. They showed the required flow shear (d Vz/ dr) had to be greater than a threshold (0.1 k VA). The ZaP group identified that Z-pinch lifetimes are ultimately limited by the ability to supply plasma and current to the Z-pinch. In 2018, the group was able to show that, by increasing the plasma current, a fusion burn could be achieved inside the Z-pinch. Scaling relationships predict an energy gain of 6 using this approach. Fuse Energy Technologies in Quebec is developing a new technique to sustain the plasma flow thereby achieving higher gains. An overview of the flow-through Z-pinch will be presented.