**A Neutron Spectrometer for General Fusion**

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 General Fusion is a company based in British Columbia, Canada, aiming to bring commercial fusion energy to market by the 2030s. General Fusion is designing a Magnetized Target Fusion (MTF) machine, the Fusion Demonstration Plant (FDP), that mechanically compresses a deuterium plasma with a liquid lithium liner. The compression will take place on timescale of 5 ms, leading to a very short, but intense burst of fusion neutrons. A key metric to measure the success of the FDP is by achieving a plasma temperature that reaches 10 keV during compression. In order to measure this, we design a time-of-flight neutron spectrometer diagnostic system composed of two layers of plastic scintillator. Due to the extremely high rate of neutrons emitted and the relatively short compression window, the design of the neutron spectrometer will have to reach time resolutions better than 150 ps, and position resolution of better than 1 cm, both challenges that will require state of the art technology and optimized design. This poster will discuss the proposed design of General Fusion’s neutron spectrometer, including the current state of simulations, the plan to use photon-to-digital converter (PDC) technology, and the challenges that will have to be overcome to make the diagnostic successful.