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## 16 - Fast Neutron Diagnostics on MTF Compression Experiments

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Measurement of deuterium-deuterium (DD) fusion neutrons is a key diagnostic for magnetized target fusion (MTF) experiments being conducted at General Fusion (GF). When combined with other available diagnostics, the detection of DD fusion neutrons can provide strong constraints on a model of plasma evolution during compression, in particular, ion temperature and density. GF plasma experiments have been monitored for high-energy particle emission using hydrocarbon liquid scintillator systems of a variety of designs. Scintillator output is digitized at high resolution over the course of the shot, which is followed by offline digital analysis of pulse height and shape of particle detection events. Pulse shape discrimination methods with sufficient accuracy and energy resolution enable separation of neutron detection events from high-energy photon detection events. GF is conducting a series of compression experiments, referred to as Plasma Compression Small (PCS), of which 16 have been completed. Results from the two most recent, PCS15 and PCS16 are presented here (see accompanying GF overview poster).

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