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## 2.1 Measurement of apparent ion temperature using the magnetic recoil spectrometer at the OMEGA laser facility

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The Magnetic Recoil neutron Spectrometer (MRS) at the OMEGA laser facility has been routinely used to measure deuterium-tritium (DT) yield and areal density in cryogenically layered implosions since 2008. Recently, operation of the OMEGA MRS in higher-resolution mode with a smaller, thinner (4 cm<sup>2</sup>, 57- $\mu$ m thick) CD conversion foil has also enabled inference of the apparent DT ion temperature ( $T_{ion}$ ) from MRS data.  $T_{ion}$  inferred from the broadening of the MRS-measured primary DT neutron spectrum compares well with neutron time-of-flight-measured  $T_{ion}$ . This result is important as it demonstrates good understanding of the different systematics associated with the two independent measurements. The MRS resolution in this configuration ( $\sigma=0.37$  MeV) is still higher than required for a high-precision  $T_{ion}$  measurement. In this contribution, we also discuss paths forward for further improving the resolution of the OMEGA MRS, including fielding a smaller foil closer to target chamber center. This work was supported in part by the U.S. Department of Energy and by the Laboratory of Laser Energetics under Contract 415935-G.

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