

Diagnosing the Stagnation Conditions of MagLIF Implosions Using Co and Kr dopants<sup>\*</sup>

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Recent experiments on the Z-machine tested several new diagnostic techniques for investigating the stagnation conditions and the origins of the mix present in a Magnetized Liner Inertial Fusion (MagLIF) target. For the first time we have collected K-shell spectra from a low-concentration, Kr dopant placed in the gaseous D<sub>2</sub> fuel. In addition, thin Co coatings were strategically applied to three different internal surfaces of the target in order to assess which surfaces actively contribute to the contamination of the fuel. Both imaging spectroscopy and narrow-band crystal imaging were used to identify the location of He-like Co ions. The T<sub>e</sub> and n<sub>e</sub> of the Co is inferred by fitting the He-alpha lines and the near-by Li-like satellites. The experimental measurements and the challenges associated with the analysis will be discussed.

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