Abstract Submitted
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Inferring Degradation Mechanisms in OMEGA Cryogenic Implosions Through Statistical Modeling[1] VARCHAS GOPALASWAMY, RICCARDO BETTI, JAMES KNAUER, AARNE LEES, DHRUMIR PATEL, ALISON CHRISTOPHERSON, KA MING WOO, DUC CAO, CLIFF THOMAS, IGOR IGUMENSHCHEV, SEAN REGAN, WOLFGANG THEOBALD, RAHUL SHAH, Lab for Laser Energetics — Statistical models of cryogenic implosions on OMEGA have been used to increase performance on the laser by relating the outputs of 1-D codes to previous experimental results. Here, we conduct a similar exercise on a synthetic dataset of 1-D and 3-D simulation codes and show that the results from a systematically perturbed simulation can be reproduced by a statistical model trained on 1-D codes. We also find connections between the inferred relationships in the synthetic data set and real data set that suggest the physical origins for degradation sources on OMEGA. Uncovering trends in the observables and comparing trends in measured data with synthetic data, has enabled to identify the dependencies of the fusion yield on the ion temperature asymmetries from the l=1 mode and on the laser beam to target ratio.

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