Abstract Submitted
for the DPP10 Meeting of
The American Physical Society

Analysis of Structured ICF Implosions Using Multiresolution Analysis Techniques: From Radiation Symmetry to Turbulent Mix[1] MARINE MARDIRIAN, BEDROS AFEYAN, Polymath Research Inc., JEAN LUC STARCK, CEA, France, MARK HERRMANN, Sandia National Laboratories — We will show, using a series of images taken at the Z facility at Sandia, and in anticipation of NIF implosion images to come, that structured implosion X ray radiographs can be decomposed into logically distinct pieces which contain quantitative information on radiation drive asymmetry, on mesoscale correlated structures, sometimes radial, sometimes azimuthal and sometimes, mixed, as well as fine scale multifractal, texture like features which can all be quantified. Thus different time snap shots of a given implosion as well as different targets can be compared to each other as well as to any code predictions as there may exist which have sufficient resolution to tackle the hundreds or thousands of Legendre modes necessary to resolve surface bumps, their collusion, their amplification and eventual fuel-ablator surface tangled and possibly turbulent mix. Three independent and complimentary multiresolution analysis techniques will be shown which can isolate and track the most interesting features and compare them to theory.

[1]Work supported by SNL.

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Date submitted: 20 Jul 2010 Electronic form version 1.4