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Modern regularization methods for deblurring and denoising in ICF[1] D.S. MONTGOMERY, P.A. KEITER, J.P. SAUPPE, LANL — Radiographic images in ICF are often characterized as being noisy and blurry. While substantial enhancements have been made in the past couple of decades to improve the spatial resolution and photon collection efficiency of X-ray imaging instruments, we are limited still to resolving only lower mode spatial structures degraded by spatial blur. Meanwhile, modern mathematical methods have been developed and applied in the medical imaging, satellite imaging, astronomy, and other communities relying on image data to robustly remove noise and image blur as a class of ill-posed inverse problems using regularization to ensure the recovered image is well behaved when information is lost from noise and blur, and use of prior information is enforced. Such methods have enabled super-resolution to be achieved in single frame images, as well as other advanced image recovery techniques. In this poster we will give a brief, high level review of the math techniques used, their applications to other areas of imaging, and initial application to ICF synthetic radiographs and NIF X-ray experimental data.

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