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Eva Comino* (eva.comino@eagles.usm.edu). *Efficient Denoising of High Resolution Color Digital Images Utilizing Krylov Subspace Spectral Methods.*

Denoising digital images includes a body of work that spans 40 years. Solution methods involving Partial Differential Equations began with the Scaled Space method and continue with the Perona Malik equation and a parade of variations thereof. Advancements in digital images resolution, computer storage and processing power motivate numerical methods to keep pace with technology. Applications for this area of study including medical imaging, weather prediction, and defense. Solution methods have primarily focused on minimizing the effect of artifacts that arise as byproducts of backward diffusion inherent in the Perona Malik equation. The proposed method focuses on two Perona Malik equation variants, each able to control backward diffusion to balance denoising and blurring processes, while avoiding any artifacts. Each equation utilizes a well posed formulation and will be applied to high resolution color digital images and utilizes exponential propagation iteration methods and Krylov Subspace Spectral methods to achieve efficient denoising. (Received September 26, 2018)