

# Image denoising for PET scan and X-ray tomography reconstruction with mixed noise

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In this work [1] we study variational models for denoising and reconstruction of PET scan and X-ray tomography measurements with Poisson and Gaussian noise. These models combine infimal-convolution denoising techniques as in [2] with reconstruction operators for PET scan and X-ray tomography data. We use a Bregman–Expectation Maximization algorithm similar to the one [3] to solve the minimization problems.

The prime driver for the development of this method is its application in X-ray tomography studies of defect formation in wire bonds.

**Joint work with:** George Papanikos, Pearl Agyakwa.

## References

- [1] G. Papanikos and Y. van Gennip A variational method for mixed denoising PET and X-ray CT image reconstruction *in preparation*.
- [2] L. Calatroni, J.C. De Los Reyes, and C.-B. Schönlieb Infimal convolution of data discrepancies for mixed noise removal *SIAM Journal on Imaging Sciences*, 10(3):1196–1233, 2017.
- [3] C. Brune, A. Sawatzky, and M. Burger Bregman-EM-TV methods with application to optical nanoscopy *International Conference on Scale Space and Variational Methods in Computer Vision*, pages 235–246, 2009.