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Towards Automatic Point Source Detection

For a deep understanding of the Universe, it is crucial to rely on complete and accurate information on its primary constituents. These constituents, such as galaxies, black holes, supernovae, and other compact objects, show distinct features in the sky and therefore imprint differently on astronomical data. In this work, we leverage these differences to construct statistical models for their a priori independent distributions in the sky. This not only enhances the overall observation reconstruction, but also allows to segregate the flux of the various components that populate the sky and more accurately study their individual features. Specifically, we introduce a new technique that uses a notion of latent-space model stress to automatically separate point-like sources from diffuse, correlated structures. We showcase our results on publicly available data.

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