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Title:	A Red-noise Eigenbasis for the Reconstruction of Blobby Images
Authors:	Hallur, Pravita (/jspui/browse?type=author&value=Hallur%2C+Pravita) Medeiros, Lia (/jspui/browse?type=author&value=Medeiros%2C+Lia) Lauer, Tod R. (/jspui/browse?type=author&value=Lauer%2C+Tod+R.)
Keywords:	Red-noise Eigenbasis Reconstruction Blobby Images
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Citation:	Astrophysical Journal, 927(1), 45170.
Abstract:	We demonstrate the use of an eigenbasis that is derived from principal component analysis (PCA) applied on an ensemble of random-noise images that have a "red" power spectrum; i.e., a spectrum that decreases smoothly from large to small spatial scales. The pattern of the resulting eigenbasis allows for the reconstruction of images with a broad range of image morphologies. In particular, we show that this general eigenbasis can be used to efficiently reconstruct images that resemble possible astronomical sources for interferometric observations, even though the images in the original ensemble used to generate the PCA basis are significantly different from the astronomical images. We further show that the efficiency and fidelity of the image reconstructions depends only weakly on the particular parameters of the red-noise power spectrum used to generate the ensemble of images.
Description:	Only IISER Mohali authors are available in the record.
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