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Optimal, fast, and robust inference of reionization-era cosmology with the 21cmPIE-INN

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Modern machine learning will allow for simulation-based inference from reionization-era 21cm observations at the Square Kilometre Array. Our framework combines a convolutional summary network and a conditional invertible network through a physics-inspired latent representation. It allows for an optimal and extremely fast determination of the posteriors of astrophysical and cosmological parameters. The sensitivity to non-Gaussian information makes our method a promising alternative to the established power spectra.

Primary authors: SCHOSSER, Benedikt (Universität Heidelberg, ARI);   HENEKA, Caroline (Universität Heidelberg, ITP);   PLEHN, Tilman (Universität Heidelberg, ITP)

Presenter: SCHOSSER, Benedikt (Universität Heidelberg, ARI)

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