Exoplanet Atmospheric Retrieval Over All Wavelengths

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Atmospheric retrieval has become the most widely used technique to infer properties of exoplanet atmospheres. Retrieval codes explore millions of possible atmospheric compositions, temperature structures, and aerosol properties to uncover the range of atmospheric states consistent with an exoplanet spectrum.

With the profusion of JWST spectra and ground-based high-resolution spectrographs, alongside near-UV spectra from Hubble, retrieval codes can now extract atmospheric information from a wider and more finely-sampled wavelength range than ever before.

I will outline the fundamental principles of atmospheric retrieval, survey the retrieval landscape of 2025, and offer future prospects for the next generation of retrieval studies.