

Solving atmospheric retrievals with deep learning.

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The field of exoplanetary spectroscopy is as fast moving as it is new. Analysing currently available observations of exoplanetary atmospheres often invoke large and correlated parameter spaces that can be difficult to map or constrain. This is true for both: the data analysis of observations as well as the theoretical modelling of their atmospheres. In many aspects, data mining and non-linearity challenges encountered in other data intensive fields are directly transferable to the field of extrasolar planets as well as planetary sciences. In this talk, I will discuss the use of machine learning and in particular deep learning to help solve for complex likelihood spaces in the analysis of atmospheres. By efficiently exploiting the information content and sparsity of the data, we can gain significant new insights into atmospheric retrieval algorithms and how to optimally analyse low to mid-resolution spectra.

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