# We learn efficient parameterizations for thermal structures of exoplanet atmospheres.

## Atmospheric retrievals of exoplanets using learned parameterizations of pressure-temperature profiles

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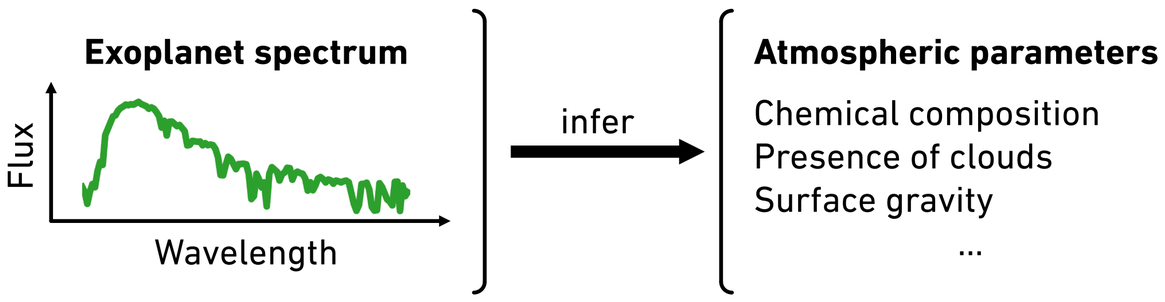
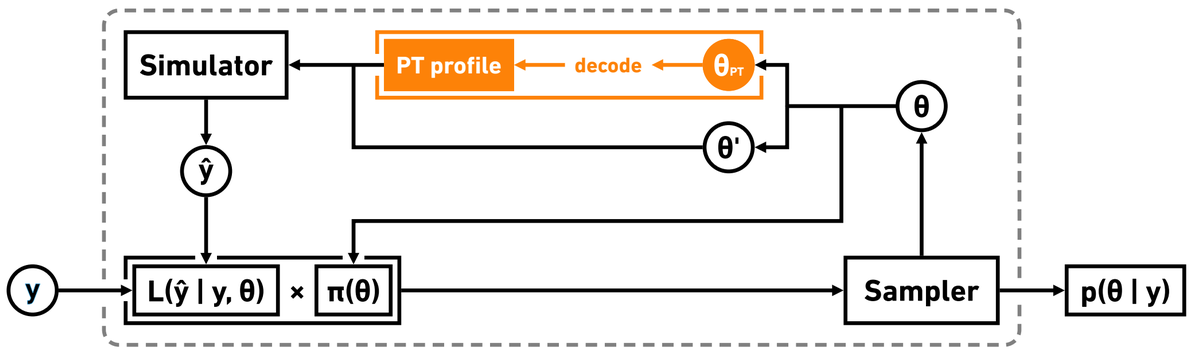
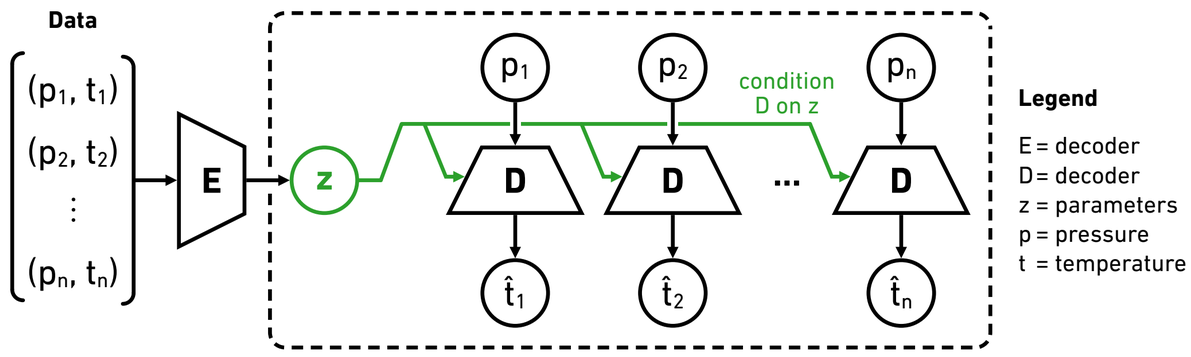
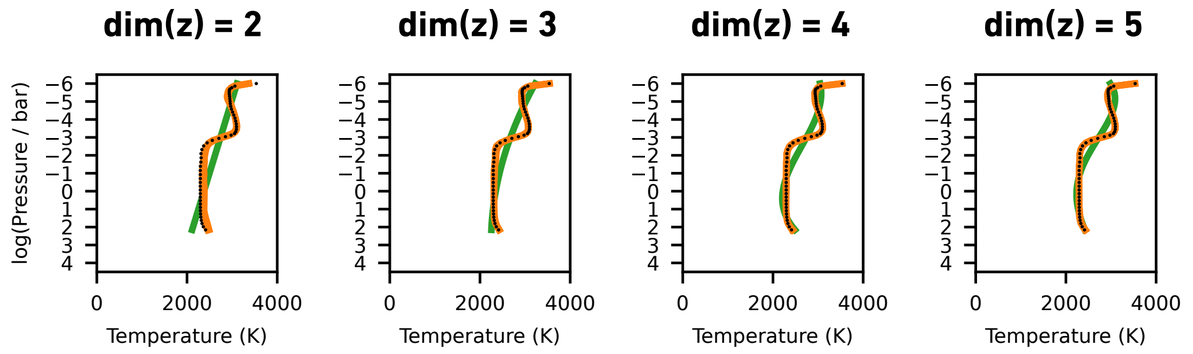



### 1 **Problem:** Infer atmospheric parameters from a planet's spectrum.

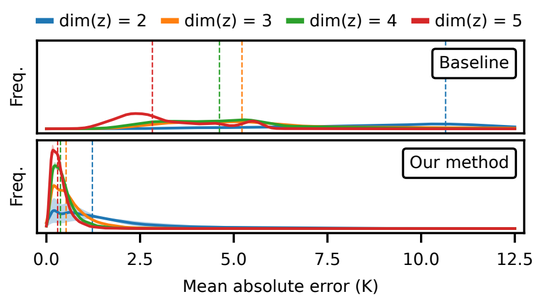



### 2 **Standard approach:** Simulation-based Bayesian inference.

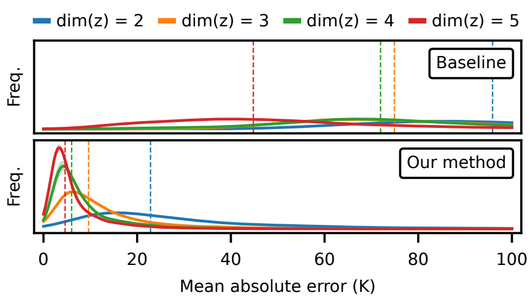



### 3 **Our idea:** Learn neural networks that parameterize PT profiles.

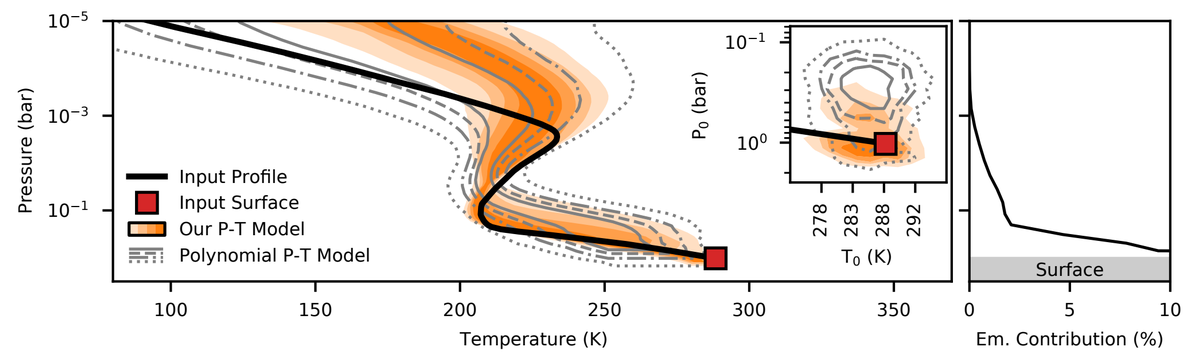
**PyATMOS dataset (Earth-like planets):**




**Goyal-2020 dataset (hot Jupiters):**




### 4 **Result:** Examples of PT profiles generated by our model.




### 5 **Result:** Reconstruction error on test set(s), our model vs. baseline.

### 6 **Result:** Atmospheric retrieval result with our model vs. baseline.

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Proudly presented at the "Machine Learning and the Physical Sciences" workshop at NeurIPS 2022.
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