

Ergodicity of a Stochastic Energy Balance Model for Global Temperature

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A simple yet extremely valuable approach to the study of the climate system comes from the use of Energy Balance Models (EBMs). Such models describe the key features of the zonally averaged temperature on the Earth's surface. The classical EBM can be improved by increasing the vertical resolution. This talk presents a two-layer energy balance model that allows for vertical exchanges between a surface layer and the atmosphere. Considering random perturbations of the model will allow to better study its long-time average behaviour. Thanks to the weak Harris' theorem we will establish exponential ergodicity. This is a first step to study the model dependence on different forcing scenarios via response theory.

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