

# On the Origin of Species Thermodynamics

*Tuesday, 25 June 2024 15:00 (15 minutes)*

We aim to derive the species thermodynamics from a bottom up perspective, namely from purely thermodynamic considerations of towers of species at finite temperature. As we will show, in a certain high temperature limit and invoking the concept of UV/IR mixing, the entropy of certain towers will change its behaviour from extensive volume scaling to an area law and in this way will end up with the same thermodynamics laws for the species particles, as obtained from the minimal black hole perspective. This will also restrict their possible mass spectra, proving another bottom up support for the emergent string conjecture.

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**Session Classification:** Parallel session