Hagedorn has no weight on his shoulders

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Abstract

The Distance Conjectures offer valuable insights on the asymptotics of moduli spaces. For AdS backgrounds, this can be tackled by studying the dual conformal field theories (CFTs) admitting a large-N limit. These theories are known to exhibit a Hagerdon-like behaviour in the free-field limit, indicating the presence of a tensionless string. We find that all four-dimensional CFTs with eight supercharges admitting a Lagrangian description have a tensionless string falling into a universality class labelled by a Lie algebra: it is either the critical type-IIB string, or a non-critical string whose Hagedorn temperature is set solely by the Coxeter number of the associated algebra. These CFTs can furthermore be described either as orbifolds of N=4 super-Yang-mills, or deformations thereof. Finally, we briefly discuss holographic implications of these results, and partial decoupling limits of these theories.

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