



Department of
Theoretical Physics

THE QUANTUM SPACETIME SEMINAR SERIES

**A derivation of AdS/CFT for vector models
(Zoom Seminar)**

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Time: 3:00 pm IST

Zoom link shall be shared separately



After discussing what it means to derive the AdS/CFT correspondence, I will describe our attempts (in collaboration with Shai Chester and Erez Urbach, 2011.06328) to make this correspondence explicit in the simplest case of the $O(N)$ vector model. We explicitly rewrite the path integral for the free or critical $O(N)$ (or $U(N)$) bosonic vector models in d space-time dimensions as a path integral over fields (including massless high-spin fields) living on $(d+1)$ -dimensional anti-de Sitter space. Inspired by de Mello Koch, Jevicki, Suzuki and Yoon and earlier work, we first rewrite the vector models in terms of bi-local fields, then expand these fields in eigenmodes of the conformal group, and finally map these eigenmodes to those of fields on anti-de Sitter space. Our results provide an explicit (non-local) action for a high-spin theory on anti-de Sitter space, which is presumably equivalent in the large N limit to Vasiliev's classical high-spin gravity theory (with some specific gauge-fixing to a fixed background), but which can be used also for loop computations. Our mapping is explicit within the $1/N$ expansion, but in principle can be extended also to finite N theories, where extra constraints on products of bulk fields need to be taken into account.