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Charged spinning operators in the O(2) model

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Large charge operators in CFTs invariant under internal symmetry can be generically associated with a superfluid phase of the theory. Therefore their correlation functions can be computed systematically within the effective field theory for the superfluid Goldstone mode. Focusing on the critical O(2) model in three dimensions, I will review this construction and extend it to include also operators with both large charge and large spin. I will discuss the results for the scaling dimension of the lightest charged operator, describing the transition from the superfluid phase to the large spin multi-trace operator regime described by the bootstrap. Based on 1711.02108 with A. de la Fuente, A. Monin, D. Pirtskhalava, R. Rattazzi and on a work in progress with Z.Komargodski.

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