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【512】Disorder-Driven Density and Spin Self-Ordering of a Spinor Bose-Einstein Condensate in a Cavity

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In this presentation, I will talk about spatial spin and density self-ordering of a transversely-pumped two-component Bose-Einstein condensate coupled into a single mode of a linear cavity. The onset of the Dicke superradiance phase transition is marked by a simultaneous appearance of a crystalline density order and a spin-wavev order. The self-ordering in our system is driven by a cavity-induced zero spatial-average Raman field and can be considered as a generic order-by-disorder process similar to the random-field-induced order in the two-dimensional classical ferromagnetic XY spin model. However, the seed of the random field in our case stems from quantum fluctuations and is a dynamical entity affected by self-ordering.

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