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Nuclear structure and quantum phase transitions with lattice effective field theory

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How do protons and neutrons bind to form nuclei? While the answer may seem as simple as the fact that nuclear forces are attractive, the full story is more complex and interesting. I discuss recent work using lattice simulations which shows nature is near a quantum phase transition between a nuclear liquid and Bose condensate of alpha particles. I also summarize some new developments and work in progress in lattice effective field theory.