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QUANTUM DROPLETS IN ULTRA COLD ATOMIC SYSTEMS

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We consider Bose-Einstein condensates (BEC) beyond mean-field theory by taking account quantum fluctuation. The quantum fluctuation due to Lee-Huang-Yang term along with mean field interaction gives an effective Gross-Pitaevskii equation that describes quantum droplets. Density distributions of droplets are localized with flat top and they are linearly stable. We also calculate Shannon entropy of the quantum droplet and find that it starts to increase abruptly at the threshold of droplet phase.