Rydberg dressing of a one-dimensional Bose-Einstein condensate

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Author(s):
Marcin Płodzień, Graham Lochead, N. J. van Druten, and Servaas Kokkelmans

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arXiv:1605.04440 [cond-mat.quant-gas]

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http://arxiv.org/abs/1605.04440 [2]

We study the influence of Rydberg dressed interactions in a one-dimensional (1D) Bose-Einstein Condensate (BEC). We show that 1D is advantageous over 3D for observing BEC Rydberg dressing. The effects of dressing are studied by investigating collective BEC dynamics after a rapid switch-off of the Rydberg dressing interaction. The results can be interpreted as an effective modification of the s-wave scattering length. We include this modification in an analytical model for the 1D BEC, and compare it to numerical calculations of Rydberg dressing under realistic experimental conditions.

- RySQ [3]
- Result [4]
- 15.10.Ne Neutral atoms: electronic states [5]
- 15.10.Ry Rydberg atoms [6]

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