

## TWIN ATOMS FROM AN EXCITED MOLECULE

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Twin photons, pairs of photons with entangled properties, are now easily produced from non linear optical crystals and experiments with these pairs are routinely done at different laboratories [1]. Is it possible to study the same kind of properties with twin atoms, i.e., pairs of massive particles also with entangled properties obtained simply by breaking diatomic homonuclear molecules [2,3], as proposed by David Bohm [4]? Experiments with Bose-Einstein condensates given rise to twin atoms have recently been done [5], as well as with two phonons in trapped ions [6], looking for Hong–Ou–Mandel classical experiment with photons [7]. Our aim in this presentation is to show that although intrinsically more complex than twin photons and experimentally simpler than Bose-Einstein condensates, twin atoms originated in a molecule can in principle show phenomena not yet observed [8].

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