

Cold Rydberg atoms in Borromean Förster coupling.

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In Förster Rydberg resonant couplings (in analogy with the Förster Resonance Transfer, FRET, in biology), two Rydberg atoms can exchange internal energy through long-range dipole-dipole interaction in a resonant way. Three- or more-body processes can also occur and can be isolated from the two-body ones. Ensembles of Rydberg atoms in a Borromean three-body Förster coupling can be studied with many implications in the understanding of the many-body problem, in the route for the formation of trimers Rydberg molecules or Rydberg clusters and in many various domains from quantum physics to biology.