**Resonant dipole-dipole interactions in electromagnetically induced transparency**

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Resonant dipole-dipole interaction (RDDI) emerges in strong light-matter interacting systems, which leads to many fascinating phenomena such as cooperative light scattering and collective radiation. Here, we theoretically investigate the role of RDDI in electromagnetically induced transparency (EIT). The resonant dipole- dipole interactions manifest themselves in the cooperative spontaneous emission of the probe light transition, which give rise a broadened linewidth and associated collective frequency shift. This cooperative linewidth originates from the nonlocal and long-range RDDI, which can be determined by the atomic density, optical depth, and macroscopic length scales of the atomic ensemble. We present the finding that EIT spectroscopy essentially demonstrates all-order multiple scattering of RDDI. Furthermore, we find that the EIT transparency window becomes narrower as the cooperative linewidth increases, which essentially reduces the storage efficiency of slow light as an EIT-based quantum memory application.