

Abstract Submitted  
for the CUWIP22 Meeting of  
The American Physical Society

**Entangled Photons from Cascade Decay of Hybridized and Dipole-Coupled Emitters** INCI ANALI, Harvey Mudd College, DEREK WANG, SUSANNE YELIN, Harvard University — One of the most versatile sources for entangled photons are emitters that interact via more than one tunable mechanism. Here, we demonstrate how hybridization and dipole-dipole interactions—potentially simultaneously available in colloidal quantum dots and molecular aggregates—leveraged in conjunction can couple simple, well understood emitters into composite emitters with flexible control over the level structure. We show that cascade decay through carefully designed level structures can result in emission of frequency-entangled photons with Bell states and three-photon GHZ states as example cases. These results pave the way toward rational design of quantum optical emitters of arbitrarily entangled photons.

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Date submitted: 10 Jan 2022

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