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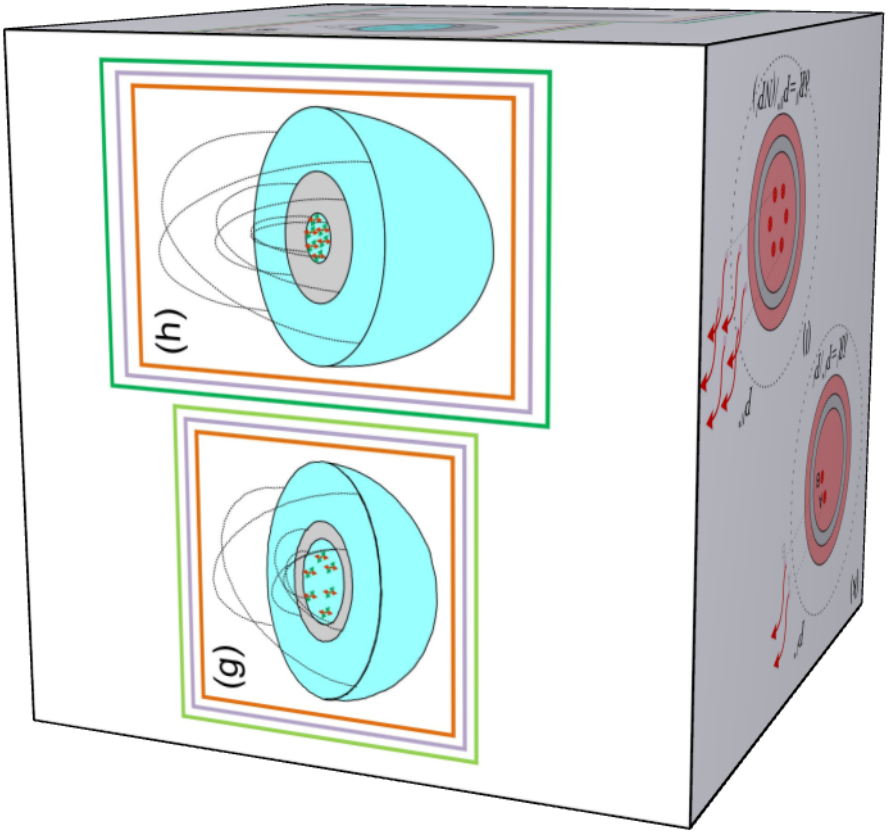

Visualization 4. Ratios of different quantities with respect to those in corresponding reference systems. (a) rδR ratio of radiative rate enhancements at excitation and emission, (b) rcQE ratio of the corrected quantum efficiencies at emission wavelength, (c) rP_x total fluorescence enhancement ratio and r$P_x cQE$ objective function ratio. Lines are to guide eyes and to uncover tendencies of depicted quantities in groups of (a, b, c) spherical and ellipsoidal nanoresonators, among them (a) excitation and emission phenomena, and at both wavelengths 4 and 6 color centers separately, (c) rP_x factor and r$P_x cQE$ and for both ratios 4 and 6 color centers separately.

Colors indicate, when certain quantity is larger in case of

4	6	number of emitters
coated	bare	type of nanoresonator
spherical	ellipsoidal	geometry of nanoresonator

ratio	bare_4		coated_4		bare_6		coated_6	
	spherical	ellipsoidal	spherical	ellipsoidal	spherical	ellipsoidal	spherical	ellipsoidal
$rcQE_{em}$	1.00	1.03	1.00	1.05	1.01	1.04	1.00	1.02
$r\delta R_{ex}$	4.00	4.00	3.98	4.00	5.99	6.00	5.98	6.01
$P^{N}*_{ex}/P^{1}*_{ex}$	16.000	15.995	15.920	15.999	35.940	36.022	35.880	36.036
$r\delta R_{em}$	4.02	4.13	4.01	4.17	6.03	6.21	6.01	6.13
$P^{N}*_{em}/P^{1}*_{em}$	16.080	16.506	16.040	16.673	36.180	37.271	36.060	36.774
rP_x	16.07	16.50	15.97	16.67	36.13	37.29	35.95	36.81
rP_xcQE	16.15	17.04	15.96	17.42	36.33	38.71	36.04	37.71

Table corresponding to Visualization 4. Ratios of different quantities in a coupled system consisting of *N* collectively oscillating SiV color centers and a corresponding reference system consisting of one single SiV color center, which prove the switching into superradiantly enhanced collective states in optimized nanoresonators. *N*: number of color centers, $rcQE_{em} = cQE^{N}_{em}/ cQE^{1}_{em}$: ratio of corrected quantum efficiencies at emission, $r\delta R_{ex} = \delta R^{N}_{ex}/ \delta R^{1}_{ex}$: ratio of excitation rate enhancements, $P^{N}*_{ex}/ P^{1}*_{ex}$: ratio of enhanced powers radiated by a coupled superradiant and a reference system at the excitation wavelength, $r\delta R_{em} = \delta R^{N}_{em}/ \delta R^{1}_{em}$: ratio of emission rate enhancements, $P^{N}*_{em}/ P^{1}*_{em}$: ratio of enhanced powers radiated by a coupled superradiant and a reference system at the emission wavelength, $rP_x = P_x^{N}/ P_x^{1}$: ratio of P_x *factors*, $rP_x = P_xcQE^{N}/P_xcQE^{1}$: ratio of objective functions.