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Femtosecond nanoplasmonic dephasing of individual silver nanoparticles RICHA MITTAL, RACHEL GLENN , ILYAS SAYTASHEV, MARCOS DANTUS, Michigan State University — Localized surface plasmon emission from individual silver nanoparticles and cluster of 100nm silver nanoparticles are probed by 15fs laser pulse replica generated by a pulse shaper. The Fourier transform of the nanoplasmonic coherence oscillations reveals different frequency components, phases, and dephasing rates for each nanoparticle. We find broadly distributed coherence dephasing rates that correspond to the cluster size. Our results provide insight into inhomogenous and homogenous broadening mechanisms in nanoplasmonic spectroscopy.

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