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Exciton Spectroscopy of Mechanically Deformed GaAs Nanomembranes BAIJIE GU, Department of Physics, University of Arizona, ROLF BINDER, College of Optical Sciences and Department of Physics, University of Arizona, THEORETICAL SOLID STATE OPTICS, UNIVERSITY OF ARIZONA TEAM — In recent years, the technology to fabricate inorganic nanostructures with curved geometries has made remarkable progress. These low-dimensional nanostructures include cylindrically and spherically bent membranes as well as wrinkled and rolled-up structures. These systems exhibit novel physical properties in terms of their electronic and optical characteristics. Our research focuses on excitonic optical properties of deformed GaAs membranes. We are developing a theoretical framework where the theory of Wannier excitons in thin layers is merged with the theory of elasticity. In our presentation, we present the basic ingredients of our theory and show results that highlight the connection between linear excitonic optical properties and the membrane's deformation-induced strain profile.

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