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Deformation of Nanoscale Elastomeric Free-Standing Films by Sessile Liquid Droplets RAFAEL SCHULMAN, KARI DALNOKI-VERESS, McMaster University — The study of liquid droplets on soft, deformable substrates has recently garnered a great deal of attention. In particular, it has been found that droplets deform elastic surfaces at the contact line, and that this deformation can yield contact angles that do not obey Young's law. Rather, the microscopic contact line geometry is dictated by a force balance between the three surface stresses, akin to the Neumann construction for droplets on liquid substrates. In our experiment, we place liquid droplets atop elastomeric free-standing films with thicknesses of hundreds of nanometers. Using optical microscopy, as well as atomic force microscopy, we directly measure the contact line geometry and induced deformation of the free-standing film.

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