Faraday instability in deformable domains

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We study the Faraday instability in floating fluid drops which behave as domains with flexible boundaries. Faraday waves interact with the shape of the drops and exert a radiation stress on the surface tension held boundaries. We observe two regimes. In the first one there is a coadaptation of the wave pattern with the shape so that a steady elongated configuration is reached. The steady shape is explained via the equilibrium between radiation stress and surface tensions.
In the second the radiation stress exceeds the response of the boundaries and no steady regime is reached. The drop stretches and ultimately breaks into smaller domains that have a complex dynamics including spontaneous propagation.