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Fracture versus cavitation in probe-tack geometry: theory and experiments PASCALE FABRE, CRPP-CNRS 115 av. Dr. Schweitzer F-33600 Pessac, JÉRÉMIE TEISSEIRE, FRÉDÉRIC NALLET, CYPRIEN GAY, CRPP-CNRS — We perform traction experiments on viscous liquids highly confined between parallel plates, a geometry known as the probe-tack test in the adhesion community. Direct observation during the experiment coupled to force measurement shows the existence of several mechanisms for releasing the stress. Bubble nucleation and instantaneous growth had been observed in a previous work. Upon increasing further the traction velocity or the viscosity, the bubble growth is progressively delayed. At even higher velocities, fractures at the interface between the plate and the liquid are observed before the bubbles have grown to their full size. We present a theoretical model that describes these regimes, using a Maxwell fluid as a model for the actual fluid. We present the resulting phase diagram for the different force peak regimes. It remarkably accounts for the data. Our results show that in addition to cavitation, interfacial fractures, commonly thought to be characteristic of soft viscoelastic solids like adhesives are already encountered in *liquid* materials.

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