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**Coalescence in low-viscosity fluids** SARAH CASE, University of Chicago and James Franck Institute — The coalescence of two liquid drops occurs very rapidly. To study the very early stages of coalescence, we measured the resistance and capacitance of the coalescing region using an electrical method [1] modified for high-frequency alternating-current response. A drop of aqueous NaCl solution is suspended in air above a second drop of the same solution. A constant voltage is maintained across the system. The lower drop is grown until it touches the upper drop, at which point a rapidly widening bridge forms between them. Our measurements allow us to obtain information regarding the characteristic bridge radius r and the characteristic length d. We observe a new asymptotic regime at early times inconsistent with previous theoretical predictions. We interpret this in terms of a slight flattening of the drop tips before coalescence. Our data taken at various drop radii as well as at various approach velocities of the two drops is consistent with this interpretation.

[1] J. C. Burton, J. E. Rutledge, and P. Taborek, Phys. Rev. Lett., 92, 244505 (2004)

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