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A Special Quadrature for Boundary Integral Techniques applied to thin regions. GREG BAKER, NATASHA GOLUBEV, Ohio State University — Boundary integral techniques for elliptic problems contain a kernel that is singular. Special methods are available for a single surface that can treat the principal-value integral accurately. But when there are two surfaces close together, integrals for points on one surface must be conducted along the other, where the kernel is nearly singular and the integrand shows rapid variation in the region of closest approach. A new technique based on analytic continuation removes the source of the difficulty providing high accuracy even when the spacing between surface points is larger than the distance between the surfaces. The application of this new technique to the motion of thin vortex layers undergoing Kelvin-Helmholtz instability and to thin liquid layers undergoing Rayleigh-Taylor instability will be described.

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