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Viscous Transport in Eroding Porous Media SHANG-HUAN CHIU, BRYAN QUAIFE, NICHOLAS MOORE, Florida State University — Erosion is a fluid-mechanical process that is present in many geological phenomena such as groundwater flow. We present a boundary integral equation formulation to simulate two-dimensional erosion in porous media. One numerical challenge is accurately resolving the interactions between nearly touching eroding bodies at low porosity. We present a Barycentric quadrature method to resolve these interactions and compare it with the standard trapezoid rule. We compute the velocity, vorticity, and tracer trajectories in the geometries that include dense packings of 20, 50, and 100 eroding bodies. Like in our previous work [1], we observe quick expending channels between close bodies, flat faces developing along the regions of near contact, and bodies eventually vanishing. Finally, having computed tracer trajectories, we characterize the transport inside of eroding geometries by computing and analyzing the tortuosity and anomalous diffusion rates. [1]B. D. Quaife *et al.*, J. Comput. Phys. **375**, 1 (2018).

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