Dragging cylinders in slow viscous flows ELENA LUCA, DARREN
CROWDY, Imperial College London — The so-called "dragging problem" in slow
viscous fluids is an important basic flow with many applications. In two dimensions,
the Stokes paradox means there is no solution to the dragging problem for a cylinder
in free space. The presence of walls changes this; the solutions exist, but are not easy
to find without purely numerical methods. This talk describes new "transform meth-
ods" that produce convenient, semi-analytical solutions to dragging problems for
cylinders in various geometries. We apply the techniques to low-Reynolds-number
swimming where dragging problem solutions can be combined with the reciprocal
theorem to compute swimmer dynamics in confined domains.

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