1171-35-200 **Siavash Jafarzadeh**, **Florin Bobaru** and **Adam Larios*** (alarios@unl.edu). *Fourier methods for nonlocal equations with physical boundary conditions.*

Fourier methods can be used to greatly speed up the computation of nonlocal equations due to the well-known Fourier convolution formula. However, Fourier methods typically require the domain to have a rectangular geometry, and hence they seem to be of little use for practical problems. We show that this difficulty can be overcome via several methods, and we show applications to linear and nonlinear problems in 2D and 3D domains with complicated boundaries and physical boundary conditions, including diffusion and corrosion problems. (Received August 10, 2021)