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**Integration of hydrodynamic interactions between filaments** YI

MAN, ERIC LAUGA, University of Cambridge — In many biological situations, slender filaments interact through a viscous fluid, and these hydrodynamic interactions play a crucial cellular role. Examples include the ability of peritrichous bacteria to bundle their flagella or the generation of metachronal waves in cilia arrays. In most cases of interest, three distinct length scales characterize the filaments, their typical thickness  $a$ , relative distance  $h$ , and length  $L$ , which are asymptotically separated as  $a \ll h \ll L$ . In this talk, we demonstrate how to analytically develop a long-wavelength integration of hydrodynamic singularities in this biologically-relevant limit.

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