

# Dynamics of elastic microfilaments in fluids

Maria Ekiel-Jeżewska

Email: [mekiel@ippt.pan.pl](mailto:mekiel@ippt.pan.pl)

Institute of Fundamental Technological Research, Polish Academy of Sciences  
Warsaw, Poland

## Abstract

Flagella of bacteria or algae, chains of diatoms, actins or artificially made microfibers are just some examples of elongated deformable microobjects moving in fluids. The basic question is how elasticity influences dynamics of such objects. Different dynamical modes and migration of flexible fibers entrained by the shear flow [1, 2] or sedimenting under gravity [3, 4] will be discussed.

## References

- [1] P. J. Żuk, A. M. Słowicka, M. L. Ekiel-Jeżewska, H. A. Stone, Universal features of the shape of elastic fibers in shear flow, *J. Fluid Mech.*, (2021), in press.
- [2] A. M. Słowicka, H. A. Stone, M. L. Ekiel-Jeżewska, Flexible fibers in shear flow approach attracting periodic solutions, *Phys. Rev. E* 101 (2), (2020), 023104.
- [3] M. Gruzziel-Słomka, P. Kondratiuk, P. Szymczak, M. L. Ekiel-Jeżewska, Stokesian dynamics of sedimenting elastic rings, *Soft Matter* 15, (36), (2019), 7262-7274.
- [4] M. Bukowicki, M. L. Ekiel-Jeżewska, Sedimenting pairs of elastic microfilaments, *Soft Matter* 15 (46), (2019), 9405-9417.