

# Liquid tightrope walkers

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## ABSTRACT

In many situations where drops hang on fibres, wind is present, as for fence nets harvesting water from fogs transported by winds [1] or for fibrous filters capturing noxious aerosols driven by air currents [2]. In these cases, it is essential to optimize the liquid distribution along the natural rails that fibres constitute [3-5]. Here we show experimentally that a transverse airflow can induce directional motion of drops and coating along horizontal fibres, despite the apparent symmetry of the system; wind also leads to strong repulsive interactions between drops (figure 1) - both effects interpreted as consequences of asymmetric wakes behind the drops.

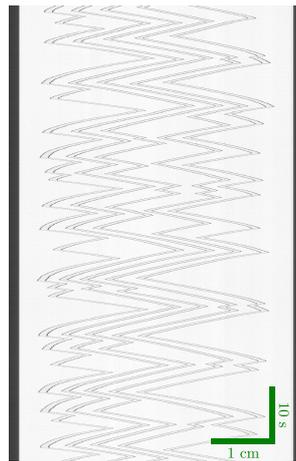


Fig. 1 : Spatio-temporal diagram of the motion of five tightrope walkers (silicon oil drops of volume 1  $\mu\text{L}$  and viscosity 4.6 mPa.s sitting on a nickel fibre of radius 75  $\mu\text{m}$ ) submitted to a transversal airflow blowing at 2.4 m/s, and confined between two solid beads (lateral black lines).

## REFERENCES

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