

Abstract Submitted
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Characterisation of metachronal waves on the surface of the spherical colonial alga *Volvox carteri* DOUGLAS BRUMLEY, MARCO POLIN, CONSTANT MOREZ, RAYMOND GOLDSTEIN, TIMOTHY PEDLEY, University of Cambridge — *Volvox carteri* is a spherical colonial alga, consisting of thousands of biflagellate cells. The somatic cells embedded on the surface of the colony beat their flagella in a coordinated fashion, producing a net fluid motion. Using high-speed imaging and particle image velocimetry (PIV) we have been able to accurately analyse the time-dependent flow fields around such colonies. The somatic cells on the colony surface may beat their flagella in a perfectly synchronised fashion, or may exhibit metachronal waves travelling on the surface. We analyse the dependence of this synchronisation on fundamental parameters in the system such as colony radius, characterise the speed and wavelength of the observed metachronal waves, and investigate possible models to account for the exhibited behaviour.

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