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A steering mechanism for phototaxis in Chlamydomonas RACHEL BENNETT, RAMIN GOLESTANIAN, University of Oxford — *Chlamydomonas* shows both positive and negative phototaxis. It has a single eyespot near its equator and as the cell rotates during forward motion the light signal received by the eyespot varies. We use a simple mechanical model of *Chlamydomonas* that couples the flagellar beat pattern to the light intensity at the eyespot to demonstrate a mechanism for phototactic steering that is consistent with observations. The direction of phototaxis is controlled by a parameter in our model and the steering mechanism is robust to noise. In the dark, our model shows emergent run-and-tumble behavior and we see switching between directed phototaxis and run-and-tumble when we switch the light on and off.

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