

Abstract Submitted  
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**The contraction of Vorticella in different Ca concentration solutions** DEEPENDRA KANTHA, DAVID VAN WINKLE, Department of Physics, Florida State University and Center for Materials Research and Technology(MARTECH) — The contraction of the stalk of *Vorticella Convallaria* was studied in media with different concentrations of calcium ion solution. Seven solutions were prepared by adding different amounts of  $\text{CaCl}_2$  in the range of 0.001M to 0.004M in 0.005M EGTA, 0.1M KCl and 0.02M MOPS. The pH values of the solutions were maintained between 6.7 and 6.9. The contractions were recorded as cines (image sequences) by a Phantom V5 camera (Vision Research) on a bright field microscope with 20X objective, with the image resolution of  $256 \times 128$  pixels at 7000 pictures per second. The change in length of stalk as a function of time was analyzed to compute velocity, acceleration, force and force coefficient. The apparent force coefficient increases linearly with time until the whole stalk is contracting. Considering time dependence of force coefficient, the contracting length is modeled as:

$$L(t) = \frac{L_0}{2} \left[ \left( 1 + \frac{C}{A} \right) \exp \left( \frac{-C + A}{2m} t \right) + \left( 1 - \frac{C}{A} \right) \exp \left( \frac{-C - A}{2m} t \right) \right]$$

Where  $L_0$  is initial contractile length,  $C = 6\pi\eta r$ ,  $A = \sqrt{C^2 - 4mK(t)}$ ,  $\eta$  is coefficient of viscosity,  $m$  is mass and  $r$  is radius of zooid.

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