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*Topological Roughness of the Human Red Blood Cell*. Preliminary report.

Human red blood cells (RBCs) exhibit spontaneous vibratory motions, referred to as flickering. Previous work using measurements of the cell roughness has indicated that older or diseased cells show significantly less roughness and temporal complexity than newly-formed and healthy cells. In our work, we use persistent homology to study this phenomena, and discover a topological version of the roughness. In addition, we show that this topological roughness represents the cells better, and can be utilized to classify different types of cells. (Received September 19, 2016)