## Abstract Submitted for the DFD16 Meeting of The American Physical Society

Simulation Of The Synovial Fluid In A Deformable Cavity<sup>1</sup> NANCY MARTINEZ-GUTIERREZ, LAURA A. IBARRA-BRACAMONTES, Universidad Michoacana DE San Nicolas DE Hidalgo — The main components of a synovial joint are a cartilage and a biofluid known as the synovial fluid. The results were obtained using the FLUENT software to simulate the behavior of the synovial fluid within a deformable cavity with a simple geometry. The cartilage is represented as a porous region. By reducing the available region for the fluid, a fluid displacement into the cartilage is induced. The total pressure reached in the interface of the deformable cavity and the porous region is presented. The geometry and properties of the system are scaled to values found in a knee joint. The effect of deformation rate, fluid viscosity and properties of the porous medium on the total pressure reached are analyzed. The higher pressures are reached either for high deformation rate or when the fluid viscosity increases.

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