1154-65-301 **Jolene Britton***, jhout001@ucr.edu, and **Yulong Xing**, xing.205@osu.edu. *High order well-balanced discontinuous Galerkin methods for blood flow simulation through arteries with living man equilibrium.*

The simulation of blood flow in arteries can be modeled by a system of conservation laws and have a range of applications in medical contexts. This system of partial differential equations is in the same vein as the shallow water equations. We present well-balanced discontinuous Galerkin methods for the blood flow model which preserve the general living man equilibrium. Schemes for preserving the well-balanced property with zero-velocity, known as the man-at-eternal-rest steady state, have been recently been addressed, however we focus on the development of schemes that consider the more general living man equilibrium with non-zero velocity. Recovery of well-balanced states via a careful choice of projection, appropriate source term approximations, and approximations of the numerical fluxes are the key ideas. Numerical examples will be presented to verify the well-balanced property, high order accuracy, and good resolution for both smooth and discontinuous solutions. (Received August 29, 2019)