

1172-34-253

Hamid Mofidi* (hamidreza.mofidi@gmail.com), 316 S Dodge Street, 3, Iowa City, IA 52240, and **Weishi Liu**. *Local Hard-Sphere Poisson-Nernst-Planck Models: Reversal Potential and Zero-Current Fluxes*.

This talk investigates reversal potential and examines ion size effects on the flow rate of matter through a cross-section by treating the ion sizes as small parameters. We consider a one-dimensional version of a Poisson-Nernst-Planck-type system with a local hard-sphere potential model for ionic flow through a membrane channel with fixed boundary ion concentrations (charges) and electric potentials. The research aims to set up a simple structure defined by permanent charges with two mobile ion species. A local hard-sphere potential that depends pointwise on ion concentrations is incorporated in the model to evaluate ion-size influences on the ionic flow. The analysis of our BVP is based on the geometric singular perturbation theory. (Received August 30, 2021)