1163-49-1424 **Quoc Tran-Dinh*** (`quoctd@email.unc.edu`), Chapel Hill, NC 27599. *Generalized Newton Methods with Polynomial-Time Iteration-Complexity for A Class of Variational Inequalities.*

In this talk, we will discuss some generalized Newton-type methods for solving a class of monotone variational inequalities that can achieve polynomial-time iteration-complexity. This problem class covers three common convex optimization problems as special cases. Our approach relies on a combination of interior-point and proximal-Newton methods. First, we will propose a two-phased algorithm and estimate its iteration-complexity. Our complexity is polynomial-time and remains the same order as in existing interior-point methods. Next, we will also specify our method to solve constrained convex optimization as well as convex-concave saddle-point problems. Finally, we will provide some numerical examples to illustrate our methods and compare them with some existing solvers.

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