1123-76-240 **Daozhi Han*** (djhan@iu.edu), Rawles Hall, 831 E 3rd St, Bloomington, IN 47405, and **Roger Temam** (temam@indiana.edu), Rawles Hall, 831 E 3rd St, Bloomington, IN 47405. *On the interaction of a vortex induced by a rotating cylinder with a plane.*

In this talk,we study theoretically and numerically the interaction of a vortex induced by a rotating cylinder with a perpendicular plane. We show the existence of weak solutions to the swirling vortex models by Hopf' extension method, and by an elegant contradiction argument, respectively. We demonstrate numerically that the model could produce phenomena of swirling vortex including boundary layer pumping and two-celled vortex that are observed in potential line vortex interacting with a plane and in a tornado. This work is joint with Roger Temam. (Received August 27, 2016)