

1154-VF-1934 **Tracey G. Oellerich*** (toelleri@gmu.edu), **Maria Emelianenko, Robyn Araujo, Lance Liotta, Alessandra Luchini** and **Abdulaziz Alaraini**. *Adaptability Conditions in Biological Networks*.

In this talk we extend adaptability conditions for biological networks to include singular systems with non-hyperbolic equilibria. The proposed theoretical extension is compatible with the notions of homeostasis and robust perfect adaptation (RPA) and clarifies the relationship between the two. The new condition is derived using the notion of Moore-Penrose pseudoinverse and is implemented using a numerically efficient algorithm. The proposed approach is tested on several synthetic systems that are shown to exhibit homeostatic behavior yet lie outside of the scope of earlier work. (Received September 16, 2019)