Applied Mathematics Seminar

Date/Time: Tue July 28 (tomorrow), 3:00 pm
Location: Math 242.1
Title: A Partial Hamiltonian Approach for Current Value Hamiltonian Systems
Speaker: Dr. Rehana Naz, Centre for Mathematics and Statistical Sciences, Lahore School of Economics, Pakistan-53200, Lahore

Abstract:

We develop a partial Hamiltonian framework to obtain reductions and closed-form solutions via first integrals of current value Hamiltonian systems of ordinary differential equations (ODEs). The approach is algorithmic and applies to many state and costate variables of the current value Hamiltonian. However, we apply the method to models with one control, one state and one costate variable to illustrate its effectiveness. The current value Hamiltonian systems arise in economic growth theory and other economic models. We explain our approach with the help of a simple illustrative example and then apply it to two widely used economic growth models: the Ramsey model with a constant relative risk aversion (CRRA) utility function and Cobb Douglas technology and a one-sector AK model of endogenous growth are considered. We show that our newly developed systematic approach can be used to deduce results given in the literature and also to find new solutions.