

A seminar in the Center for Systems Science

by Eric Denardo entitled

Nearly strongly polynomial algorithms for transient dynamic programs

on Friday, April 17, 2015, at 4:00 pm in

Room 514 Dunham Lab (10 Hillhouse)

Abstract: A prize-winning paper by Yingyu Ye studies a Markov decision problem having m states, a total of n actions, a discount factor of c per transition, and a linear utility function. He showed that this problem can be solved by the simplex method and by policy improvement with a number of iterations that is a low-order polynomial in m , n and c . Except for its dependence on c , Ye's bound is *strongly polynomial*.

Transient dynamic programs and Leontief substitution systems are seen to be natural settings for Ye's method of analysis, and his bound is slightly sharpened.

This paper is based on work done in concert with the late Uriel G. Rothblum, to whose memory it is dedicated.