1125-05-1300   **Liam Solus*** (`liam.solus@gmail.com`), KTH Royal Institute of Technology. *On consistency guarantees for DAG model selection.*

A directed acyclic graphical model is a multivariate statistical model in which the nodes of a directed acyclic graph (DAG) represent random variables and the edges encode a set of CI relations. Given a set of observed CI relations $\mathcal{C}$, an important goal in statistics is to identify a DAG model that best encodes the relations $\mathcal{C}$ with respect to some scoring criterion. In recent work, Mohammadi, Uhler, Wang, and Yu show that if $\mathcal{C}$ is a DAG gaussoid then it can be represented by a polytope called a DAG associahedron. The authors then proposed a greedy algorithm for DAG model selection that walks along the edges of the DAG associahedron. In this talk, we will discuss consistency guarantees for this algorithm, considering well-studied assumptions such as faithfulness, adjacency faithfulness, and the SMR assumption. We will see that the algorithm is provably consistent under the faithfulness assumption by relating it to the popular Greedy Equivalence Search algorithm (GES). We find that each edge traversal of the DAG associahedron encodes multiple iterations of Chickering's Apply-Edge Operation algorithm, the underlying mechanism in GES. This talk is based on joint work with Caroline Uhler (MIT) and Lenka Matejovicova (IST Austria). (Received September 20, 2016)