



THE UNIVERSITY OF
CHICAGO

Department of Statistics
STATISTICS COLLOQUIUM

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Tajima Coalescent and Statistical Summaries of Unlabeled
Genealogies

MONDAY, February 24, 2020 at 4:00 PM

Jones 303, 5747 S. Ellis Avenue

Reception following the colloquium at 5:00 PM in Jones 304

ABSTRACT

In this talk I will present the Tajima coalescent, a model on the ancestral relationships of molecular samples. This model is then used as a prior on unlabeled and ranked genealogies to infer evolutionary parameters from molecular sequence data. I will then show that conditionally on observed data and a particular mutation model, the cardinality of the hidden state space of Tajima's genealogies is exponentially smaller than the cardinality of the hidden state space of Kingman's genealogies. We estimate the corresponding cardinalities with sequential importance sampling. Finally, I will propose a new distance on unlabeled and ranked genealogies that allows us to compare different genealogical distributions and to summarize genealogical distributions.

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