1057-62-147 **Alexander Schoenhuth*** (alexsch@math.berkeley.edu), Department of Mathematics, University of California at Berkeley, 748 Evans Hall #3840, Berkeley, CA 94720-3840. *How to identify hidden Markov processes—an algebraic statistical answer.*

Identifiability of hidden Markov processes has been a driving question since their introduction to the related communities. Two major questions have evolved from the related discussions. The first one is to decide whether two hidden Markov parameterizations give rise to equivalent processes which has recently been solved to practical satisfaction. The second one is to decide whether a probability distribution stems from a hidden Markov process. The solution so far available defies any computational testing and is of very limited practical use. Here, we combine related results into an algebraic statistical setting, thereby obtaining new theorems. As a result, we can give a comprehensive, algorithmic explanation of how to solve the related decision problem. (Received January 19, 2010)