1116-62-2723 **Eric Ruggieri*** (eruggier@holycross.edu), 1 College Street, Worcester, MA 01610. *A Pruned Recursive Solution to the Multiple Change Point Problem.*

Long time series are often heterogeneous in nature. As such, the most appropriate model is one whose parameters are allowed to change through time. The exponential number of solutions to the multiple change point problem requires an efficient algorithm in order to be computationally feasible. Exact Bayesian solutions have at best quadratic complexity in the number of observations, which can still be too slow for very large data sets. Here, a pruned dynamic programming algorithm is introduced to fit a piecewise regression model to a data set with unknown break points. The algorithm removes unessential calculations, reducing the complexity of the most time consuming step of the algorithm from quadratic in the number of observations to quadratic in the average distance between change points. Analysis of two real data sets shows that this approximate algorithm produces a nearly identical representation of the joint posterior distribution on the locations of the change points, but with a significantly faster run time than its exact counterpart. (Received September 22, 2015)