



Computational Seismology using Genetic Algorithms

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Seismology is fast becoming a useful tool in a broad array of physical environments, from global and local helioseismology to coronal seismology and asteroseismology of other Sun-like stars. In most cases we do not have enough information to perform inversions, and we are confined to forward modeling - searching for the best possible match between the observations and theoretical models. Genetic algorithms are a class of heuristic search techniques that apply basic evolutionary operators in a computational setting. Although they are often more efficient than other comparably global optimization methods, they are still quite demanding computationally. Fortunately, the procedure is inherently parallelizable and in practice it scales almost linearly with the number of available processors, even on distributed clusters. I will present an overview of this innovative approach to forward modeling and parallel computing, with a special emphasis on asteroseismology of Sun-like stars.