

Abstract Submitted  
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**Darwin's Design: Genetic Algorithms and Likelihood Surfaces in LISA Data Analysis** JEFF CROWDER, NEIL CORNISH, LUCAS REDDINGER, Montana State University - Bozeman — Thousands of low frequency gravitational wave sources will be detectable by the Laser Interferometer Space Antenna (LISA). A data analysis method has to be found to handle the large number of sources, many of which will have signals overlapping. This talk will focus on a new method for gravitational wave data analysis that provides simultaneous solutions for multiple sources within a chosen frequency band. This approach uses Genetic Algorithms (GAs) to perform searches of simulated LISA data. GAs show great promise in handling multiple source signals. Results, extracted from simulated LISA data, will be presented showing how GAs will be able to address the LISA low frequency problem of large numbers of overlapping signals. Additionally, this talk will discuss features of likelihood surfaces that exist for various sets of simulated LISA data, and how these features affect parameter extraction for all methods of data analysis. A comparison of several types of search techniques and how the likelihood surface features affect their efficacy will be presented.

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