BAYESIAN PARAMETER ESTIMATION FOR INSPIRAL SIGNALS OBSERVED BY LISA

Christian RÖVER[1], Alexander STROEER[2,3], Ed BLOOMER[4], Nelson CHRISTENSEN[5], James CLARK[4], Ian HARRY[6], Martin HENDRY[4], Chris MESSENGER[4], Renate MEYER[1], Matthew PITKIN[4], Emma L. ROBINSON[2], B. S. SATHYAPRAKASH[6], Jennifer TOHER[4], Alberto VECCHIO[1,2], John VEITCH[4], Graham WOAN[4]

[1] *The University of Auckland, Auckland, NEW ZEALAND*
[2] *University of Birmingham, Birmingham, UK*
[3] *Northwestern University, Evanston, IL, USA*
[4] *University of Glasgow, Glasgow, UK*
[5] *Carleton College, Northfield, MN, USA*
[6] *Cardiff University, Cardiff, UK*

We present a Bayesian approach to the analysis of gravitational wave signals as measured by LISA. A special feature of our model is the treatment of the noise spectrum as an unknown, which is supposed to capture instrument noise as well as the background confusion noise from thousands of binary systems; the estimate of the noise spectrum is inferred 'on-the-fly'. We implemented a Markov chain Monte Carlo algorithm that is able to efficiently sample from the large parameter space implied by our model, allowing one to infer the 9 parameters of a massive binary black hole inspiral event. We show results from an application of the above framework on the data from Mock LISA Data Challenge (MLDC) round 2.