

Identification and removal of non-Gaussian noise transients in the time domain for gravitational wave searches

Benjamin Steltner,^{1,2,*} Maria Alessandra Papa,^{1,2,3} and Heinz-Bernd Eggenstein^{1,2}

¹*Max-Planck-Institut für Gravitationsphysik (Albert-Einstein-Institut), D-30167 Hannover, Germany*

²*Institut für Gravitationsphysik, Leibniz Universität Hannover, D-30167 Hannover, Germany*

³*University of Wisconsin-Milwaukee, Milwaukee, Wisconsin 53201, USA*

In this work we present a new method to remove non-Gaussian noise transients in gravitational wave data. The method extends a previous implementation [1] with two main novelties. As a result, our method preserves ($\sim 74 - 94\%$) more data than previously achieved, while obtaining the same, when not higher, noise reduction. We characterise the performance with searches on simulated signals in real data. While developed in the context of searches for continuous signals, this method can be used to prepare gravitational wave data for any search. We release the software associated with this new technique.

[1] Samantha A. Usman et al. The PyCBC search for gravitational waves from compact binary coalescence. *Class.*

Quant. Grav., 33(21):215004, 2016. doi:10.1088/0264-9381/33/21/215004.

* benjamin.steltner@aei.mpg.de