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Looking for truffles in trash: The new DMoff veto in Einstein@Home searches for continuous gravitational waves

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In the current era of the advanced LIGO and Virgo detectors, we are closer than ever to detecting the first continuous gravitational wave signal. At the same time, our searches are becoming increasingly sensitive, to both astrophysical sources and the detector artifacts that can mimic the signals that we search for. We developed a straightforward veto to quickly and effectively exclude signal candidates that arise from these artifacts: We run a simplified version of our search but with the Doppler modulation turned off (DMoff), making instrumental artifacts more prominent while suppressing astrophysical signals. Using this new veto, we were able to exclude >99.9% of the thousands of candidates from the recent Einstein@Home all-sky search as having terrestrial origins. I will discuss the current design and implementation of this veto, as well as the prospects for its use in future searches for continuous gravitational waves.

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