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Impacts of Peculiar Velocities on Standard Siren Cosmology

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As we discover increasing numbers of gravitational wave sources, our ability to use them for Cosmological studies advances. With next-generation gravitational-wave observatories, we expect constraints on H0 using gravitational waves to reach the sub-percent level. We must first understand the systematic uncertainties that affect current gravitational-wave cosmological methods to achieve this. This work focuses on quantifying the errors in H0 estimates that arise when neglecting peculiar velocity corrections with Standard Sirens. We find that disregarding peculiar velocity corrections leads to biases and increased uncertainties in H0 on the order of ˜4%.

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