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An Analysis of Coupling between the x_1 and x_{12} Interferometers for LISA Pathfinder[1] BRITTANY HOWARD, University of Michigan - Dearborn — Due to tolerances in the manufacturing process, noise from the jittering of the spacecraft housing LISA Pathfinder (LPF) is appearing in the differential measurement between its two test masses (TM's). This phenomenon manifests as a small but measurable coupling between the readouts of LPF's two heterodyne interferometers, x_1 and x_{12}. In this study, two LISA Pathfinder experiments are analyzed using three methods in an effort to characterize and quantify the coupling as well as to potentially identify its source. The main question considered is this: does the coupling change with the absolute displacement between the TM's? As a result of this work, reliable values for coupling between LPF's x_1 and x_{12} interferometers are found, and they are seen to depend on the absolute displacement between the test masses to some degree.

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