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Precision Determination of the Newtonian Gravitational Constant G in HUST Group JUN LUO, Huazhong University of Science and Technology — The Newtonian gravitational constant G holds an important place in physics. Though there have been about 300 published measurement values of G since the first laboratory measurement done by Cavendish over 200 years ago, its measurement precision is among the worst of all the fundamental physics constants. Up to now, even for the seven most precise values of G with their assigned uncertainties within 50 ppm, they are only consistent with each other in the range of about 500 ppm. It seems clear that further investigation and depression of more possible systematic errors are needed greatly for improving the accuracy of the G measurement. In order to find the unknown potential errors in different methods, the time-of-swing method and the angular-acceleration-feedback method are both used to determine the G value in our cave laboratory. In this talk, we will present some updated progress about the G measurement by means of these two different methods.

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