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BOUND ON THE Q-FACTOR OF A G-CONSTANT MEASURING PEDULUM DEVICE FROM GRAVITATIONAL STOCHASTIC BACKGROUND

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We discuss the possible effects of gravitational-wave stochastic background on the performance of a pendulum device such those used in precise measurements of the gravitational constant G. The variation ΔQ of the quality factor Q of the pendulum induced by the stochastic background is evaluated, by using as numerical input the results obtained in gravitational antennas experiments. It is found $|\Delta Q| \sim 10^{-10}$, completely negligible with respect to a typical value $Q \sim 10^5$.

Key words: gravitational constant, stochastic gravitational radiation, pendulum Q factor.

1. INTRODUCTION

It is well known that the exact value of the Newtonian gravitational constant G is important to be known with a great precision, for both theoretical, experimental and applicative reasons [1]. A very precise measurement of G, up to one part in 10^6, is presently being performed by the group of the Politecnico di Torino, by exploiting a sensitive pendulum device [2].