

Abstract Submitted  
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**Measurement of the Planck constant using a watt balance at NIST** STEPHAN SCHLAMMINGER, DARINE HADDAD, FRANK SEIFERT, RUI MIN LIU, DAVID NEWELL, JON PRATT, NIST — A watt balance compares mechanical power to electrical power. Mechanical power is measured with respect to the International System of Units (SI) of the second, meter, and kilogram. Electrical measurements are made with respect to the quantum conventional electrical units based on the Josephson and von Klitzing constants as established in 1990. When used to measure electrical power, the conventional electrical units yield a value of the Planck constant,  $h$ . A comparison of mechanical to electrical power allows the precise determination of  $h$  in SI units. International agreement of various determinations of the value of the Planck constant is a requirement for a redefinition of the SI such that the conventional electrical units become SI units. We have spent most of 2012 upgrading the existing NIST watt balance. In the past few months, we have been using the balance for a precise determination of  $h$ . To avoid observer's bias, the measurements have been performed blindly: The exact value of the mass used in the measurements is unknown to the experimenters. In this presentation, we will present the progress of the experiment, including some preliminary results. We will further outline the plans for the immediate future.

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