

EINLADUNG ZUM  
**WIENER PHYSIKALISCHEN KOLLOQUIUM**

**90 YEARS ON: THE LONG PATH TO MEASURING  
FRAME-DRAGGING**

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In 1918, Josef Lense and Hans Thirring showed that in Einstein's beautiful new theory of gravitation, general relativity, rotating matter exerts a dragging effect on the framework of space-time. They calculated the magnitudes of expected effect on satellites in orbit around rotating planets. In this lecture I describe how, finally, 90 years later, the NASA Gravity Probe B mission, launched 20 April 2004, has provided a decisive measurement of the closely related effect on gyroscopes in earth orbit, first calculated by Leonard Schiff.

The gyroscopes required a performance  $10^7$  times better than the best inertial navigation gyroscopes. Developing them and the many other new technologies for the mission proved a fascinating and sometimes daunting task, including a three-way collaboration between Stanford University, aerospace industry and NASA. The contributions of students, both physics and engineering, have been extraordinarily impressive.

I shall conclude with some observations on the wider significance of the GP-B experience.

**Montag, 13. Oktober 2008, 17:30 Uhr**  
(ab 17:00 Uhr Kaffee)

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