

Sub-femto-Newton sensing torsion pendulum for detection of light force: supplement

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Supplement DOI: <https://doi.org/10.6084/m9.figshare.20980459>

Parent Article DOI: <https://doi.org/10.1364/OL.472130>

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The picture of the experimental device and the key parameters of it are as follows:

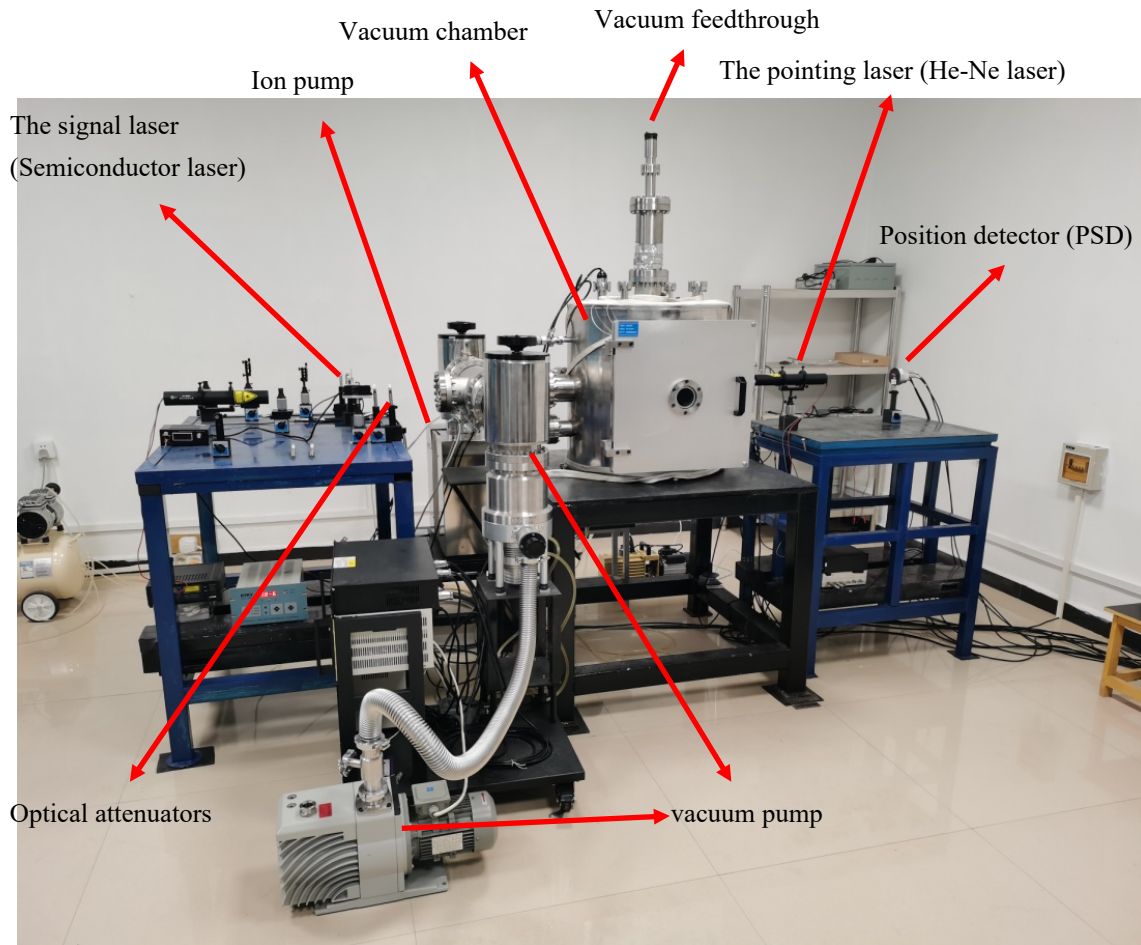


Fig. S1. Panoramic picture of experimental device (PC not displayed). The experimental system is placed in the laboratory in the basement. The laboratory has a good vibration isolation and constant temperature environment ($\Delta T \sim 0.05$ K/day).

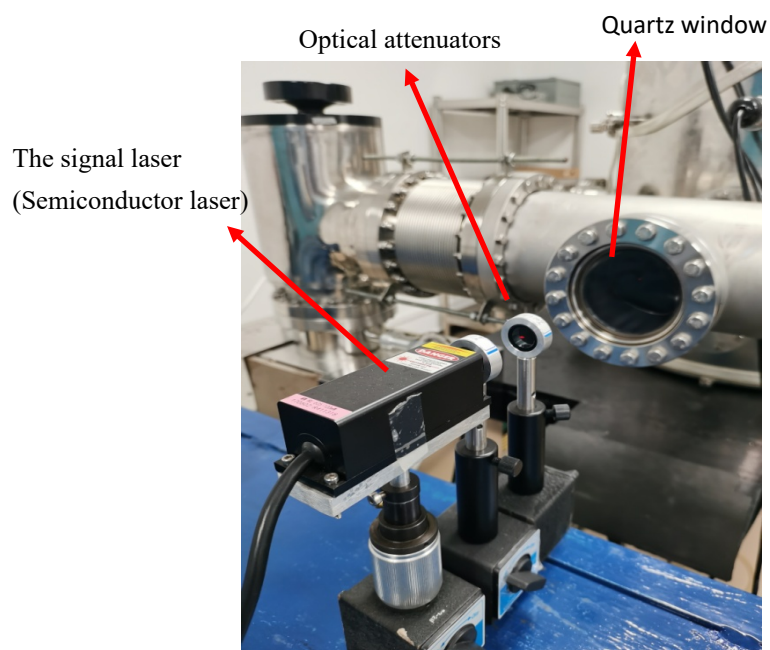


Fig. S2. The signal laser beam power changes by 1.07mW, and optical attenuators attenuates it to about $0.7\mu\text{W}$.

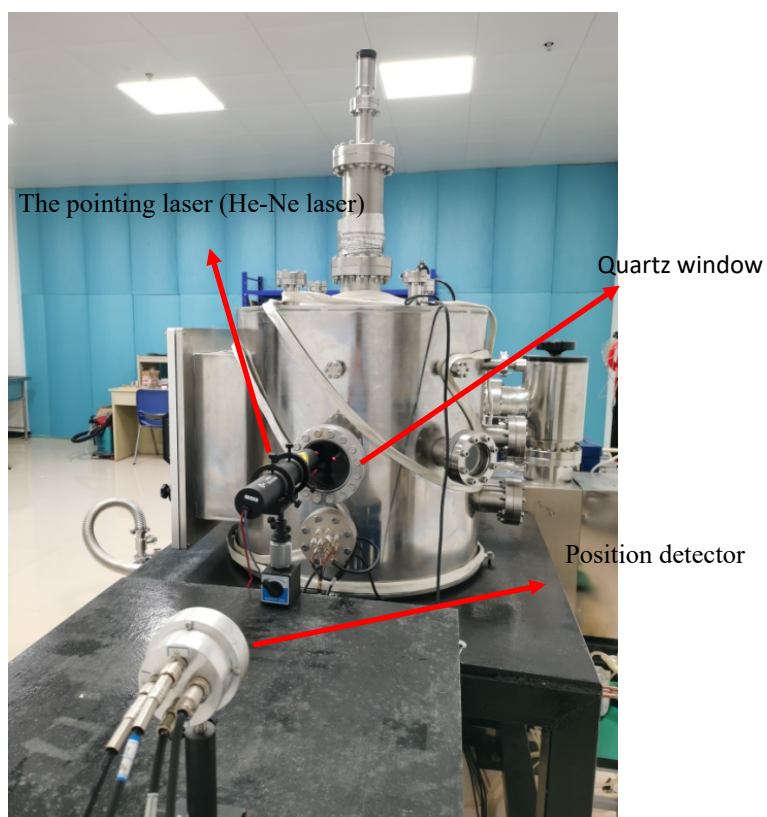


Fig. S3. Angle detection system. The position detector is about 1.31m away from the torsion pendulum.

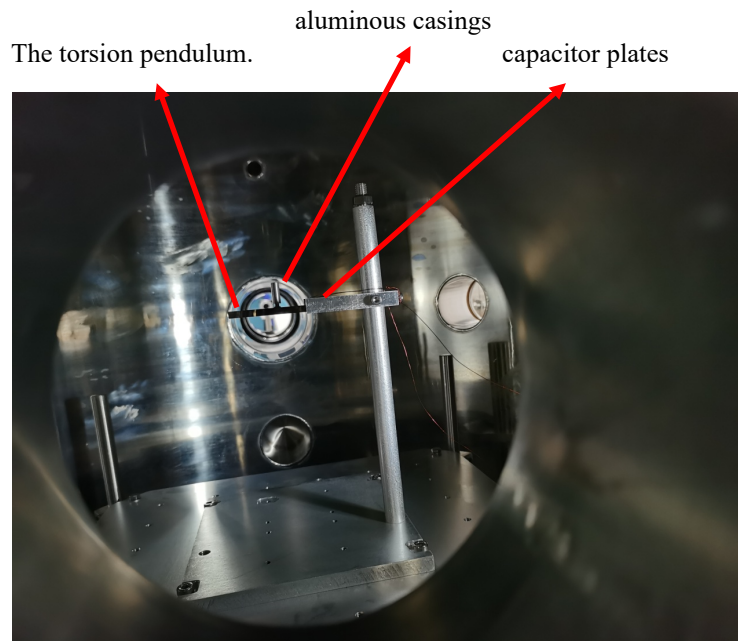


Fig. S4. Inside of vacuum chamber. The torsion pendulum is suspend by a 46 cm long tungsten fiber, 8 μ m in diameter, and an aluminum-coated silicon wafer, 70 mm \times 5 mm \times 0.2mm in size, which has a mass of 0.17 g , the total mass of torsion pendulum is about 1.4 g.

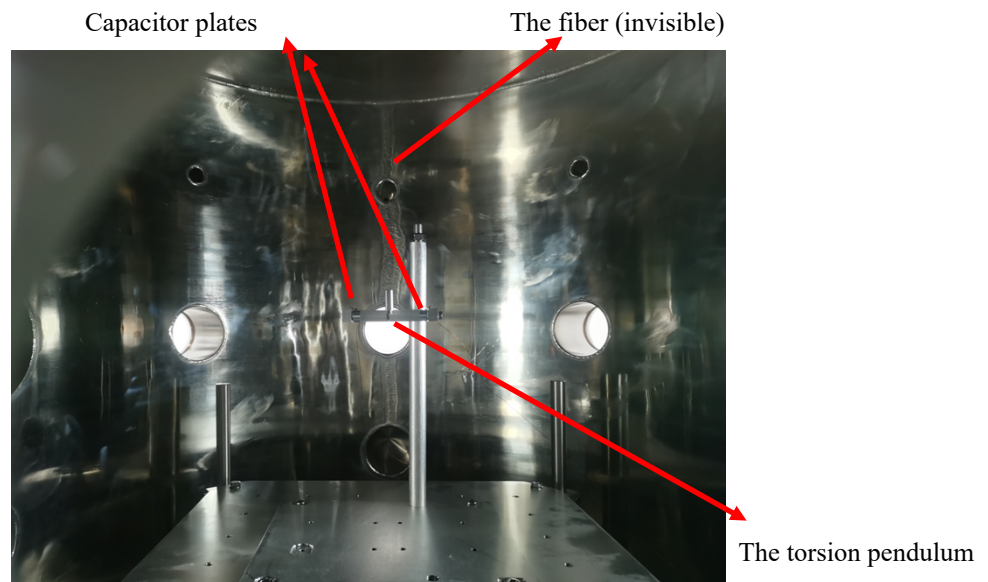


Fig. S5. Another view of the torsion pendulum. A pair of capacitor plates with an area of 0.6cm² are used for dynamic amplitude control, they are placed 2cm opposite the torsion pendulum and 2.5cm away from the tungsten wire.