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Atomic Vapor Glass Cell Fabrication for Quantum Experiment

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A vapor glass cell containing neutral atoms is an important tool for developing portable quantum devices. It can be used in quantum sensors, atom chips and cryptography devices quantum-related experiments involving quantum metrology, computation and communication. In this work, we find that the absorption coefficient of rubidium atoms in our home-made vapor cell decreases as the input power of light increases. We prepare the cell by filling it with rubidium atoms in a closed system at ambient pressure. We focus on the changes of the absorption profile based on the D2-transition while we change the power of the input laser. These changes are important in determining the absorption coefficient of vapor in the glass cell, which reflects restriction of ambient pressure on the working condition of our quantum devices. The absorption profile is compared with that obtained from the commercial cell.

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