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# Supplementary Materials for

## Direct Kerr frequency comb atomic spectroscopy and stabilization

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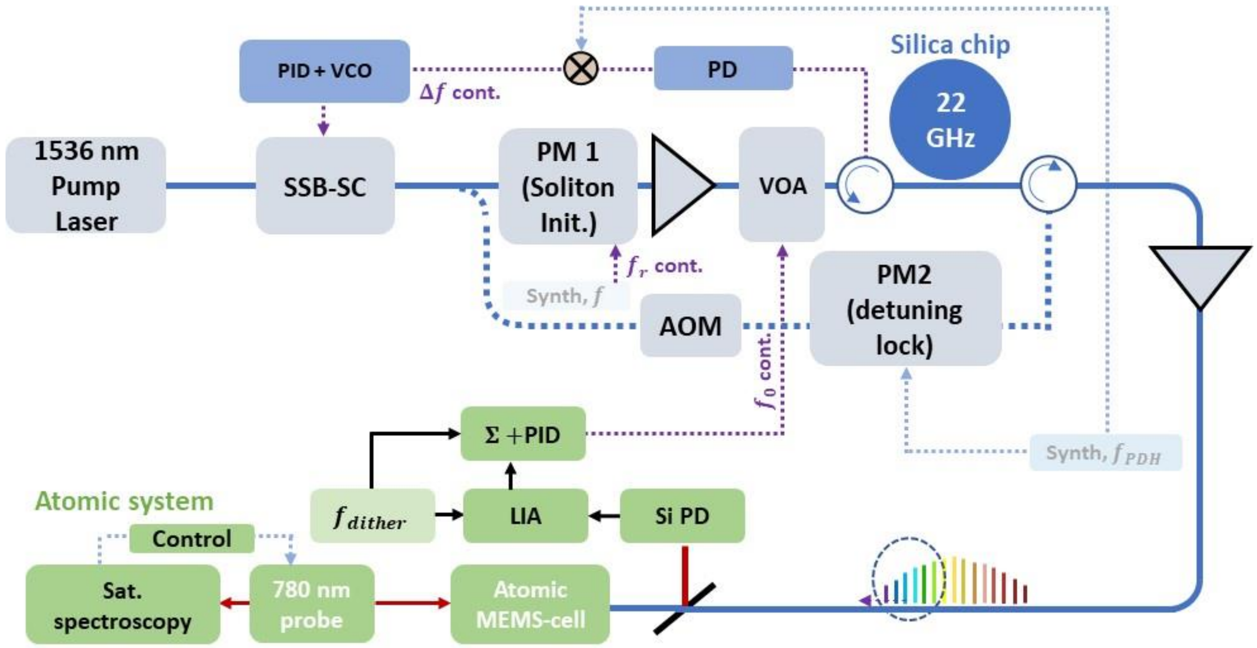


**Fig. S1. Kerr comb DFCS elaborate apparatus.** An ECDL drives a single-sideband, suppressed-carrier (SSB-SC) frequency shifter, driven by a voltage-controlled oscillator (VCO). The pump beam is phase modulated (PM1) at by a synthesizer reference to a Hydrogen maser, with a frequency *f* which roughly coincides with FSR of the resonator. This signal is optically amplified, and its intensity is controlled by variable optical attenuator (VOA). We implement a PDH servo-loop to control the resonator detuning with a counter propagating acoustic-optical-modulation (AOM) shifted and phased modulated (PM2) beam. The counterpropagating signal is circulated, detected and demodulated and controls a proportional intergrade derivative (PID) controller that feeds the VCO to offset lock the pump laser. A portion of the comb spectrum is amplified and sent to a micromachined atomic cell, which is also illuminated by a counter propagating CW 780 nm probe laser. The 780 nm probe is locked to the $^{85}$Rb Doppler free cycling transitions by means of a saturation spectroscopy setup.  By use of a dichroic mirror and a Si photodetector, the 780 nm light is monitored. Dithering the VOA at the frequency $f_{dither}$ and demodulating using Lock-in amplification (LIA) yields an error signal which is fed to a PID servo to lock $f_{ceo}$ to the atomic transition.