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Ultra-quiet Mirror Suspensions for the Glasgow Sagnac Speed Meter

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The main goal of the Glasgow Sagnac Speed Meter is to show reduced back action noise compared to a Michelson interferometer with equivalent parameters. In order to ensure limitation by back action noise the input test masses of the two triangular arm cavities are chosen to be 1g mirrors. To achieve the necessary isolation from seismic motion all optics need to be suspended by multi-cascaded pendulums. This poster presents the different suspension designs used in this proof of concept experiment and highlights the challenges for the 1g mirror suspensions.

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