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# Sapphire fibre suspensions for KAGRA and ET with low loss jointing techniques

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The KAGRA suspension system has succesfully demonstrated the use of Sapphire as a suspension material for cryogenic gravitational wave detectors, however for this to be fully exploited in KAGRA and in the Einstein Telesopce new methods of fibre treatment and jointing are need to reduce the thermal noise cotnribution to detector sensitivity while maintaining heat extraction and mechanical performance. We present a technique or laser polishing and laser welding that has been demonstrated to be able to produce high strength, high conductivity, low loss suspensions systems. We present the outlook for how this technology could be applied as a possible upgrade of the KAGRA suspensions system in future and how this can be used as a solution for the Einstein Telescope Low Frequency detector.

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