

## Stray light noise from dust particles in GW interferometers

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High cleanliness levels are a prerequisite for GW detectors with laser interferometers: this can guarantee that light scattering is minimized and under control as being limited by the quality of the optical components. Assessing the cleanliness requirements involves sizing the stray light noise added by dust particles deposited on the optical components or floating and crossing the light beams. We report about the work we have done towards this goal for the case of the Einstein Telescope. We discuss the relevant parameters determining the scattering properties of dust particles; then we describe both the analytical and numerical work to predict the dust-originated stray light noise in the detector, as well as the experimental work to verify our studies. Finally we report about the work we carry out for the Virgo interferometer to monitor the evolution in time of the cleanliness in several of its environments.

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