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Optical simulations of stray light on instrumented baffles surrounding Virgo end mirrors during O5

As part of the second phase of Advanced Virgo update program, instrumented baffles are being constructed to be installed around the end mirrors in the main FP cavities, in continuation of what has been implemented for the input mode cleaner end mirror during phase I. According to the current design, these baffles will be equipped with more than 200 photosensors, allowing for real-time monitoring of the stray light around the mirrors. We present optical simulations of the light distribution in the detector's main cavities to assess the ability of the sensors to effectively monitor misalignment and defects on the mirrors' surface and to play a role in the pre-alignment of the interferometer. The effect of the backscattered light from the baffles is also computed and projected over the O5 sensitivity curve, to evaluate possible effects of the presence of instrumented baffles on the ultimate sensitivity of the detector.

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