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Surrogate M1M3 dynamic tests

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The M1M3 glass mirror is now on site and has been installed on its cell and coated. Before installing the M1M3 glass mirror on the Rubin telescope, we proceeded to confirm the safety of the glass using a surrogate mirror on the telescope mount, and to verify accordance with specifications. Designed to be used for tests, the surrogate has similar mechanical properties as the glass mirror, such as mass, centre of gravity, and geometry. The M1M3 steel surrogate was installed on the cell and on the telescope mount (TMA) in May 2023. The cell was fully equipped with the force actuators, hardpoints and various monitoring sensors. An extensive dynamic testing campaign took place until February 2024, when the surrogate and cell were dismantled from the TMA for the reception of the M1M3 glass mirror.

The test campaign was configured to validate the safe and dynamic telescope capabilities.

We also checked the position repeatability before and after a slew for different azimuth, elevation and speeds. We also investigated possible M1M3 surrogate vibrations due to the Fan Coil Units (FCU), which could have an impact on image quality.

Analysis was done on data taken during this period with dedicated dynamic tests. However, more data will be needed for the vibration analysis.

Results show that the position repeatability is almost within specifications, and that vibrations due to FCUs can be neglected.

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