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## CTAO MST back-coated mirrors development

Back-coated mirrors offer an alternative to the standard front-coated mirrors, enhancing durability and long-term reflective properties by placing the exposed front coating behind a thin protective glass layer. This design ensures a long-term protection of the reflective layers, mitigating the effects of environmental exposure on the soft protective coating (typically quartz) and reflective aluminium, which commonly affect front-coated mirrors. Additionally, the mechanical properties of the thin front panel in back-coated mirrors improve the overall durability of the mirror segment. In this contribution, we present a comparison of front- and back-coated composite mirror prototypes that have recently been developed for CTAO MST telescopes. We present mirror designs and discuss the mechanical properties, scratch test and surface hardness, in relation to mirror durability and lifespan. Enhancing the durability of the mirrors impacts the operating costs of telescopes and reduces the environmental footprint of the project by eliminating the need for mirror removal or re-coating during the lifetime of the project. The back-coated mirror technique is currently being tested as prototypes for the CTAO MST.

### Collaboration(s)

CTAO

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