



Contribution ID: 78

Type: poster

## Amorphous silicon as low loss, high refractive index material for dielectric mirror coatings

*Tuesday, 24 May 2016 18:00 (0 minutes)*

The dielectric mirror coatings in aLIGO are made of alternating layers of silica and tantala. Such materials exhibit high mechanical loss at low temperature, therefore reducing the advantages of cooling as the primary solution to coating thermal noise. Amorphous silicon is a promising candidate as a replacement of tantala as high refractive index material in a Bragg stack. Having a refractive index higher than tantala, it allows for thinner layers, its low loss enables low thermal noise coatings. High optical absorption is the main limitation in exploiting aSi. We report on the characterisation of optical absorption and microscopic structure of amorphous silicon films.

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**Session Classification:** Poster Session