

# Physics Colloquium

## Imaging the Voices of the Past: Using Optical Metrology to Restore Early Recorded Sound

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Until about 1950, when magnetic tape use became common, audio information was stored on mechanical media, such as a phonograph disc record or cylinder, through undulations of the surface structure (grooves). The groove shape and position can be reconstructed without mechanical contact using precision optical metrology tools. The surface map thus obtained can be digitally processed to remove noise artifacts due to debris, damage and wear, and to convert the groove positional information into audio data. The approach holds promise for the reconstruction of valuable historical recordings, using full surface information to improve the sound fidelity, and eventually as a means of automated mass preservation. The current results and prospects for the future will be discussed.

**Thursday, October 1, 3:30pm,  
SCI 234**

**Refreshments will be served in Sci 103 at 3:00pm**