



Acoustics Research in Chauvet Cave: Initiating the PaleoAcoustics Project

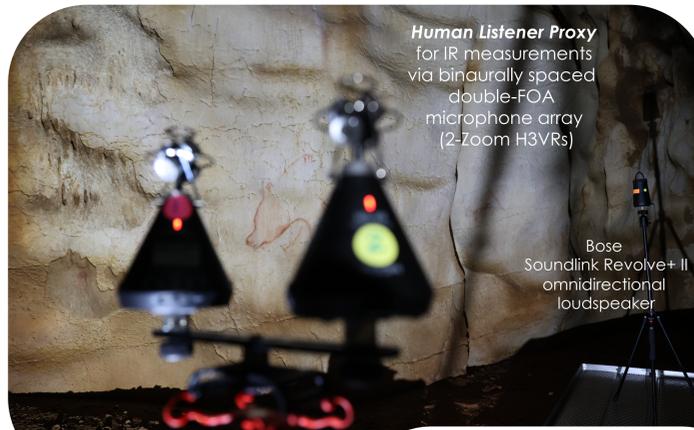


Miriam Kolar, Luna Valentin, Jonathan Abel, Peter Svensson, Sara Martin, John Chowning, Romain Michon, Matt Wright



Composer John Chowning of the **Center for Computer Research in Music and Acoustics (CCRMA)** assembled an acoustics team to join **Équipe Chauvet**, directed by archaeologist Carole Fritz, in collaboration with Paleolithic art specialist Gilles Tosello & **a large multidisciplinary team** investigating topics such as interspecies interactions (e.g., cave bears!) as well as the extraordinary human cultural evidence throughout the cave in its Upper Paleolithic context.

Archaeometric acoustics fieldwork, physics-based acoustical modeling, & human-centered engineering enable **virtual explorations of sonic communication** in the UNESCO World Heritage site **Chauvet-Pont-d'Arc Cave (Ardèche, France)**.

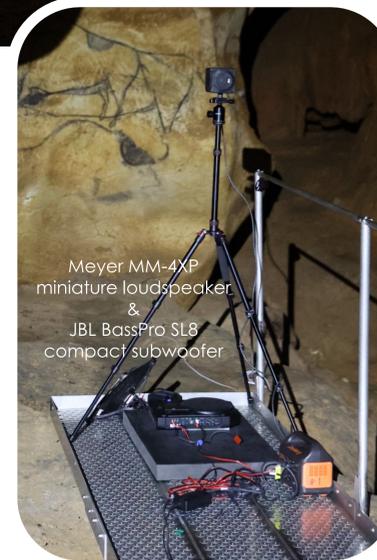


Human Listener Proxy for IR measurements via binaurally spaced double-FOA microphone array (2-Zoom H3VRs)

Bose Soundlink Revolve+ II omnidirectional loudspeaker



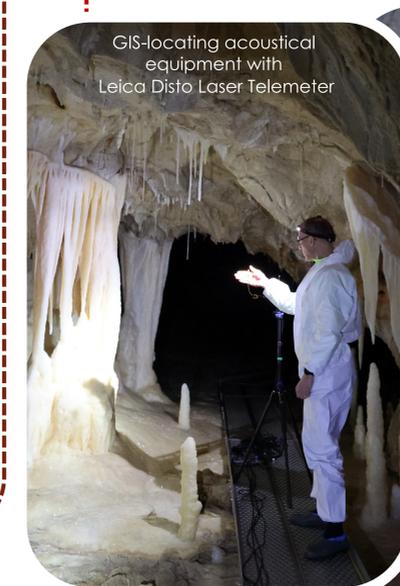
Spaced omni microphone array (Countryman B6 mics)



Meyer MM-4XP miniature loudspeaker & JBL BassPro SL8 compact subwoofer



In March 2022 fieldwork in Chauvet Cave we initiated **acoustical mapping & data collection for modeling research** via GIS-located acoustical impulse response measurements **to advance archaeological knowledge & reconstruct acoustics prior to geomorphological changes** since Aurignacian artmaking began 36,000 years ago.

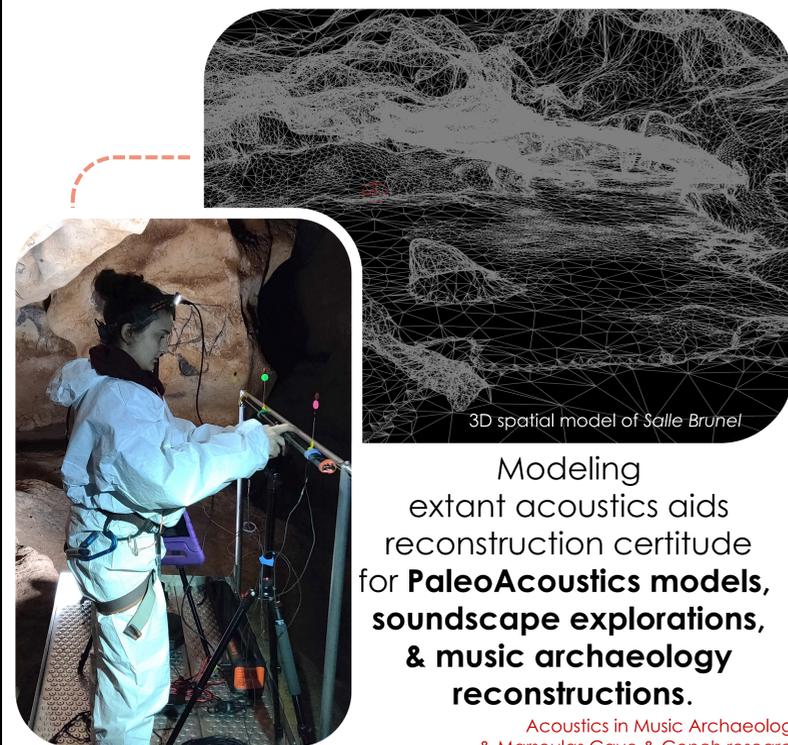


GIS-locating acoustical equipment with Leica Disto Laser Telemeter

Human-centered research design enables direct translation of measured acoustics into auralizations. We will correlate acoustical data with visual-spatial documentation for multimodal virtual access.



Speleoacoustics methodology



3D spatial model of Salle Brunel

Modeling extant acoustics aids reconstruction certitude for **PaleoAcoustics models, soundscape explorations, & music archaeology reconstructions.**

Acoustics in Music Archaeology & Marsoulas Cave & Conch research



Binaurally spaced Countryman B6 microphones in multichannel omni array

Access to Chauvet Cave has been strictly controlled since its modern re-discovery in 1994, limited to a few researchers a few weeks/year. **Its World Heritage designation mandates that virtual forms of access be developed for public engagement** according to cultural heritage conservation protocols.