The role of acoustic scale in the perception of musical notes and instruments

Abstract:

This talk is about the sounds made by musical instruments and how we perceive those sounds. It is intended to explain the basics of musical note perception; that is, why instruments come in families; what determines ‘register’ within families; and why we hear distinctive differences between members of a given instrument family - even when they are playing the same note. On the surface, the answers to these questions may seem obvious; one could say that brass instruments all make the same kind of sound because they are all made of brass, and the different members of the family sound different because they are different sizes. But there is a deeper explanation involving three acoustic properties of musical sounds, as they occur in air. The talk describes these properties (with audio demos) and explains why they are particularly useful in (a) summarizing the physics of note production by instruments, on the one hand, and (b) explaining the dimensions of musical note perception, on the other hand.