

Prof. [Sten Ternström](#)

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The research interests of Sten Ternström center on technical aspects of voice acoustics, especially singing. This includes researching measurements of voice, usually for clinical purposes, and implementing them in practical forms. Lately, his hot topics have been how to address the methodological challenges of the great variability in voices; as well as various analyses of the electroglottogram. Sten Ternström also likes to stay current with acoustics and sound processing for music and audio, and teaches several courses on those topics. His PhD thesis was on the acoustics of choir singing, and this has been a sporadically recurring theme, especially in his outreach activities.

Sten Ternström received his MScEE in 1982, PhD in 1989 and became professor in 2003, all at KTH. He has been p.i. or co-p.i. in some twenty research projects, including including site and project coordination of two EU FET-Open projects on voice. He is a Fellow of the Acoustical Society of America and serves on several editorial boards, frequently reviewing for journals and conferences in speech, voice and audio.

Keynote Talk title: *Who is normal, and how can we know ?*

The quest for objective physical criteria for normal or aberrant voice has so far been disappointing; on the whole, perceptual evaluations still have greater evidential value. One reason is that current measurement paradigms often result in a severe undersampling, undermining validity. All voice metrics exhibit considerable variation, not only across individuals, but also across the voice range. Making “voice maps” over $f_0 \times \text{SPL}$ reveals a surprising amount of variation, even in homogeneous populations of normophonic individuals; so normative averages are not to be found. However, under stringent protocol, individuals do systematically reproduce their *own* voice maps, as shown by Pabon and others. So, the norm could be the patient herself, if recorded *prior* to the pathology or the intervention. From comparing voice maps, not to a population norm, but to earlier takes of the same person, specific and detailed conclusions can be drawn.