

## **DRAMATIC SOPRANO OR NOT? A LONG-TERM-AVERAGE STUDY**

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**Background:** The classification of singers is an important aspect of singers' education. An earlier investigation showed that dramatic sopranos used higher subglottal pressures and produced higher sound pressure levels than lyrical sopranos. Yet, objective criteria for such classification are largely missing. This investigation is an attempt to explore to what extent long-term-average spectrum (LTAS) analysis can provide relevant information.

**Method:** Recordings were made of five dramatic and five lyrical sopranos singing an aria and of eleven sopranos with different degrees of voice characteristics, all experienced in the classical singing voice tradition. Two expert panels rated, on a visual analogue scale how typical of dramatic soprano they found the voices. Their ratings were compared with LTAS data. In addition one of the panels rated, also on visual analogue scales, how important perceived auditory properties are to the classification.

**Results:** The LTAS of the sopranos receiving the highest ratings for "Dramatic" showed a high peak amplitude near 800 Hz and high level at frequencies below that peak. Furthermore, they showed a prominent LTAS peak near 3000Hz, which, however, was about 10 dB weaker than the singer's formant cluster peak found in male classically trained singers. Voices with weaker low spectrum partials tended to be perceived as more typical of soubrette voices. The ratings of timbral characteristics of dramatic soprano showed that the expert panel regarded "Heavy" and "Dark" as typical of dramatic soprano voices. Presumably, this was related to low frequency of the first formant. The observations were supported by comparisons with LTAS of world famous dramatic sopranos. Morphological and physiological correlates of these characteristics of these findings will be discussed.

**Conclusions:** LTAS analysis seem to contain information relevant to voice properties typical of dramatic sopranos concerning sound pressure level, dominance of the voice source fundamental, and spectrum energy between 3000Hz and 4000Hz.