

## Stage Acoustics for Musicians: going beyond the Support Parameter ST1

Eckhard Kahle<sup>1</sup>

Kahle Acoustics, 188 Avenue Moliere, 1050 Brussels, Belgium

### ABSTRACT

Notions relevant to hearing on stage include (i) hearing oneself, (ii) hearing others as well as (iii) hearing the hall response. This multi-dimensional aspect is not reflected in the commonly used, stage-averaged, ST1. Concerning the question of (i) hearing oneself, variations of ST1 should be analyzed (strings and woodwinds need more acoustic support than brass and percussion) and the optimal average value depends on ensemble size. Concerning (ii) hearing others, the work of Dammerud indicates that early reflections on stage can be both beneficial (“compensating reflections” between stage left and stage right) and detrimental (“competing reflections” from brass instruments that lower the audibility of other instruments). Finally, concerning (iii) hearing the hall, initial parameters have been proposed by Dammerud but have not found wide-spread use yet.

Case studies will be given from experience and criteria proposed to evaluate and optimize the different aspects of on-stage hearing conditions. This is especially important as with modern computer programs and optimizations, it is possible to favor either hearing oneself or hearing others, i.e. either reinforce the reflections to the source or diminish reflections to the source and enhance cross-stage communication.

---

<sup>1</sup>ekahle@kahle.be