

**Bachelorarbeit**

**PALC Implementation as a Web Application  
with Visual User Interaction**

Line source arrays (LSAs) are used for large-scale sound reinforcement aiming at the synthesis of homogeneous sound fields for the whole audio bandwidth. The deployed loudspeaker cabinets are rigged with different tilt angles and/or electronically controlled in order to provide the intended coverage of the audience zones and to avoid radiation towards the ceiling, reflective walls or residential areas (*Thompson 2009, Feistel et al. 2013*).

In *Straube et al. 2017*, the analytical polygonal audience line curving (PALC) approach for finding appropriate LSA cabinet tilt angles with respect to the geometry of the receiver area and the intended coverage was introduced. Based on the available MATLAB implementation, the aim of this bachelor thesis is the implementation of the PALC approach as a web application with visual user interaction. Following the mobile first strategy, the results are to be visualized as a venue slice plot according to *Straube et al. 2015*. Both the intermediate and the final results of the iterative PALC calculation are to be shown.

The users of this application should be able to select the input values, such as the number of the LSA cabinets, the height of an LSA cabinet, the mounting position of the LSA and the audience line graphically and by coordinates. As a result, the user obtains the calculated tilt angles between the LSA cabinets. Since practical realizations only allow for discrete sets of tilt angles, the implemented application should also comprise the possibility of entering predetermined tilt angle values, among which a solution is found.

**References**

- Thompson, A. (2009): "Improved Methods for Controlling Touring Loudspeaker Arrays." In: "*Proc. of the 127th Audio Eng. Soc. Conv.*", New York, #7828
- Feistel, S.; Sempf, M.; Köhler, K.; Schmalle, H. (2013): "Adapting Loudspeaker Array Radiation to the Venue Using Numerical Optimization of FIR filters." In: "*Proc. of the 135th Audio Eng. Soc. Conv.*", New York, #8937
- Straube, F.; Schultz, F.; Makarski, M.; Spors, S.; Weinzierl, S. (2015): "Evaluation Strategies for the Optimization of Line Source Arrays." In: "*Proc. of the 59th AES Int. Conf. on Sound Reinforcement*", Montreal, Canada
- Straube, F.; Schultz, F.; Bonillo, D.A.; Weinzierl, S. (2017): "An Analytical Approach for Optimizing the Curving of Line Source Arrays." In: "*Proc. of the 142nd Audio Eng. Soc. Conv.*", Berlin, #9699

**Prerequisites**

Experiences with web applications with visual user interaction, HTML, Python, MATLAB or similar

**Supervisors**

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