

## DAGA 2022

March 21<sup>st</sup> – March 24<sup>th</sup>, 2022

**Place:**

Stuttgart, Germany

**Title:**

Near-field acoustic holography using far-field measurements

**Authors:**

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**Abstract:**

The knowledge of the acoustic surface velocity of radiating structures is extremely valuable in order to identify strongly vibrating surfaces and to suggest appropriate measures for troubleshooting. However, this information is difficult to obtain from far-field measurements. Because of the exponential decaying evanescent waves, the inverse problem from the measured position to the sound surface is very ill-conditioned and measurements must be carried out at a very close distance from the sources in the acoustic near field.

This work proposes the use of a generative neural network that learns the distribution of “possible” near-field results based on far-field measurements and uses this information to generate a distribution of reasonable results. These results can then be combined with the geometric constrains of the source to obtain a good image of the vibrating surface. It is shown that this method provides meaningful results for far-field measurements.

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