

**MAT-01-024**

**On the error of prediction caused by the uncertainty of absorbing coefficients**

*Attila Balázs Nagy*

*Budapest University of Technology and Economics*

*Magyar Tudósok körútja 2*

*1117 Budapest, Hungary*

*Phone: +36 1 463 1806*

*Fax: +36-1-463-3266*

*[email=nagyab@hit.bme.hu](mailto:nagyab@hit.bme.hu)*

When designing a room we can choose the appropriate absorbing coefficients from lots of databases. Usually these coefficients are given with 1 percent accuracy. What accuracy can we expect in our results? The paper starts from examining how the uncertainty of absorbing coefficients influences the reverberation times through the Sabine-formula. By assuming normal distribution of errors analytical calculations are performed. Beyond the statistical approach, the paper examines how do errors accumulate and change when performing ray-tracing. For this investigation a simple shoebox shaped room is taken. Beside the reverberation time other parameters (clarity, definition) are also examined.