

Kundt tube, microphone relative calibration

I



measurement I

→ calib_micm_1.mat

II



measurement II

→ calib_micm_2.mat

$$\frac{P_{A,I}}{P_{B,I}} = \frac{P_{A,II}}{P_{B,II}}$$

$$P_{A,I} = P_{1,I}$$

$$P_{B,I} = g_m P_{m,I}$$

$$P_{A,II} = g_m P_{m,II}$$

$$P_{B,II} = P_{1,II}$$

$$\Rightarrow \frac{P_{1,I}}{g_m P_{m,I}} = g_m \frac{P_{m,II}}{P_{1,II}}$$

$$H_I = \frac{P_{1,I}}{P_{m,I}}$$

$$H_{II} = \frac{P_{1,II}}{P_{m,II}}$$

$$\Rightarrow g_m = \sqrt{H_I H_{II}}$$

relative gain of mic m
compared to mic 1