

Supplementary material file for the paper "Ultrabroadband sound control with deep-subwavelength plasmacoustic metalayers"

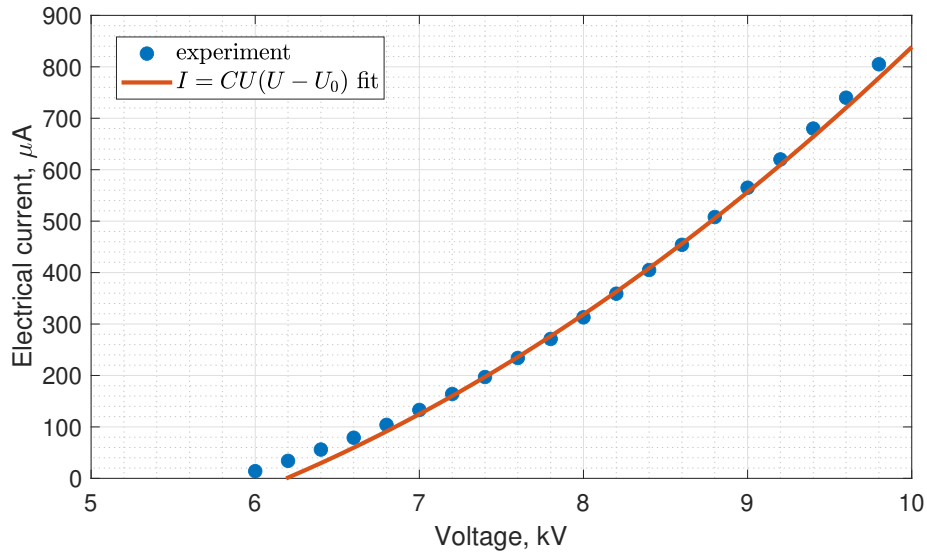
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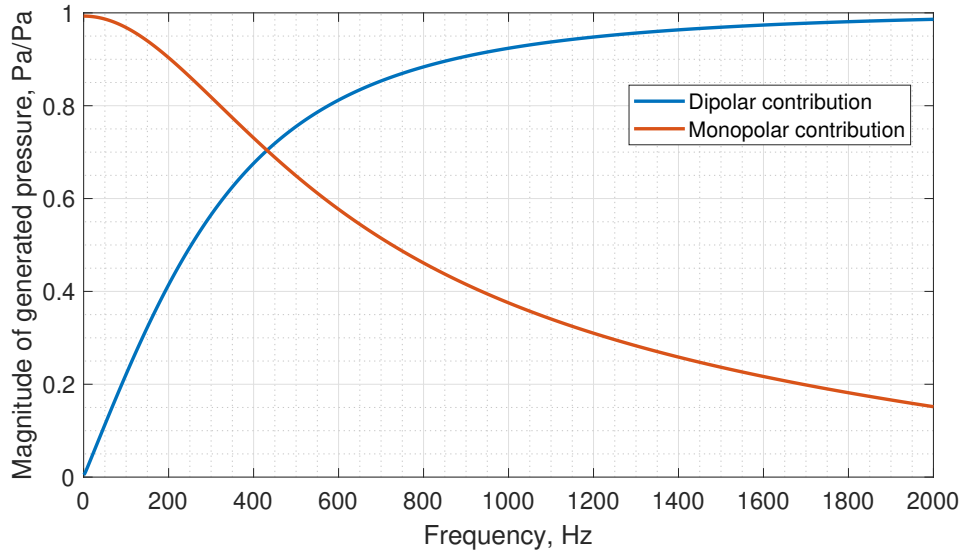
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Supplementary table 1. Physical and geometrical parameters of the discharge and air medium used to form the control transfer function $\theta(\omega)$.

Parameter	Symbol	Value	Unit
Air mass density	ρ_0	1.23	kg m^{-3}
Sound speed in air	c	343	m s^{-1}
Ambient temperature	T_0	293	K
Heat capacity	C_P	1015	$\text{J kg}^{-1} \text{K}^{-1}$
Inter-electrode gap	d	$6 \cdot 10^{-3}$	m
Discharge area	S	$25 \cdot 10^{-4}$	m^2
Microphone distance	x_0	$1 \cdot 10^{-2}$	m
Enclosure length	l	$25 \cdot 10^{-3}$	m
Load impedance	Z_l	$14.7 \cdot 10^3$	Pa s m^{-1}
Positive ion mobility	μ_i	$1.1 \cdot 10^{-4}$	$\text{m}^2 \text{V}^{-1} \text{s}^{-1}$
Voltage offset	U_{DC}	8.0	kV
Onset voltage	U_0	6.189	kV
Fitting constant	C	$2.2 \cdot 10^{-4}$	A V^{-2}



Supplementary figure 1. Measured voltage-current characteristics of the discharge and its fit with Townsend formula in the form $I = CU(U - U_0)$. Estimated parameters (with their 95% confidence bounds): $C = 2.20(2.13, 2.27) \cdot 10^{-11} \text{ AV}^{-2}$, $U_0 = 6189(6123, 6255) \text{ V}$.



Supplementary figure 2. Magnitudes of sound pressure signals, derived from equation 7, generated by a plasma-coustic metalayer at the microphone position, in response to an incident sound source of amplitude 1 Pa.