Prediction-Based Auralization of a Multirotor Urban Air Mobility Vehicle

Siddhartha Krishnamurthy[1] and Stephen A. Rizzi[2]
NASA Langley Research Center, Hampton, VA, 23581, USA

Rui Cheng[3]
National Institute of Aerospace, Hampton, VA, 23681, USA

D. Douglas Boyd, Jr.[4] and Andrew Christian[5]
NASA Langley Research Center, Hampton, VA, 23681, USA

Sound File Listing

The sound files listed in the first column of the table below are referenced in the paper and are associated with figures listed in the third column. The fourth column specifies the number of bits for every sample in the sound files. One sound file is normalized. To recover its original amplitudes, multiply the sound file data by the factor in the fifth column of the table below.

File Name	Description	Associated Figures in Paper	Bits Per Sample	Multiplication Factor to Recover Original Amplitudes
rotor1_selfNoise_synth.wav	**Synthesized self noise of Rotor 1 of the eVTOL quadrotor vehicle, 1.8 mm blade trailing edge thickness.**	**Figure 15 Figure 16**	**16**	**17.4360**
SUIE_R1_selfNoise_rec.wav	**Original self noise recording of rotor R1 of Straight Up Imaging Endurance (SUIE) quadrotor.**	**Figure 17**	**32**	**1.0**
SUIE_R1_selfNoise_0.23ms.wav	**Self noise synthesis of SUIE R1 using spectrum time history data with 0.23 ms time steps.**	**Figure 17**	**32**	**1.0**
SUIE_R1_selfNoise_3.20ms.wav	**Self noise synthesis of SUIE R1 using spectrum time history data with 3.20 ms time steps.**	**Figure 17**	**32**	**1.0**
Quad_auralization_selfNoise.wav	**Auralization of eVTOL quadrotor, all four rotors,**	**Figure 18**	**16**	**1.0**

[1] Research Engineer, Structural Acoustics Branch, AIAA Senior Member.
[2] Senior Researcher for Aeroacoustics, Aeroacoustics Branch, AIAA Fellow.
[3] Senior Research Engineer.
[4] Research Engineer, Aeroacoustics Branch.
[5] Research Engineer, Structural Acoustics Branch.

	self noise only, 1.8 mm blade trailing edge thickness.			
Quad_auralization_1.8mm.wav	**Auralization of eVTOL quadrotor, all four rotors, periodic noise and self noise, 1.8 mm blade trailing edge thickness.**	**Figure 19 Figure 22**	**16**	**1.0**
Quad_auralization_0.9mm.wav	**Auralization of eVTOL quadrotor, all four rotors, periodic noise and self noise, 0.9 mm blade trailing edge thickness.**	**Figure 22**	**16**	**1.0**
Quad_auralization_3.6mm.wav	**Auralization of eVTOL quadrotor, all four rotors, periodic noise and self noise, 3.6 mm blade trailing edge thickness.**	**Figure 22**	**16**	**1.0**
Quad_auralization_7.2mm.wav	**Auralization of eVTOL quadrotor, all four rotors, periodic noise and self noise, 7.2 mm blade trailing edge thickness.**	**Figure 22**	**16**	**1.0**