

Gestural input effects on the spectral envelope of violin sounds



Quim Llimona

MUMT 605 Final Project

December 18th, 2015



Background: **MUSMAP**



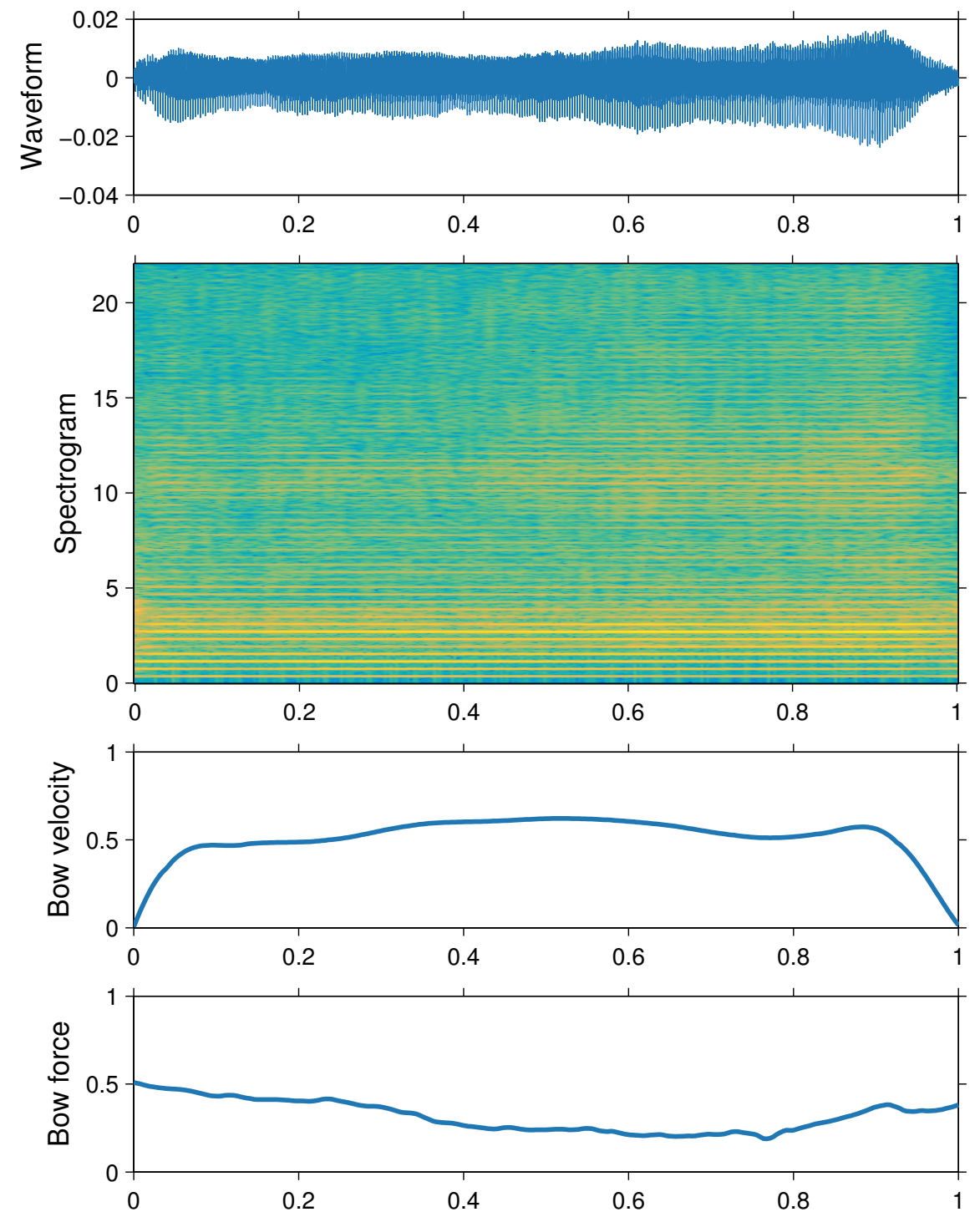
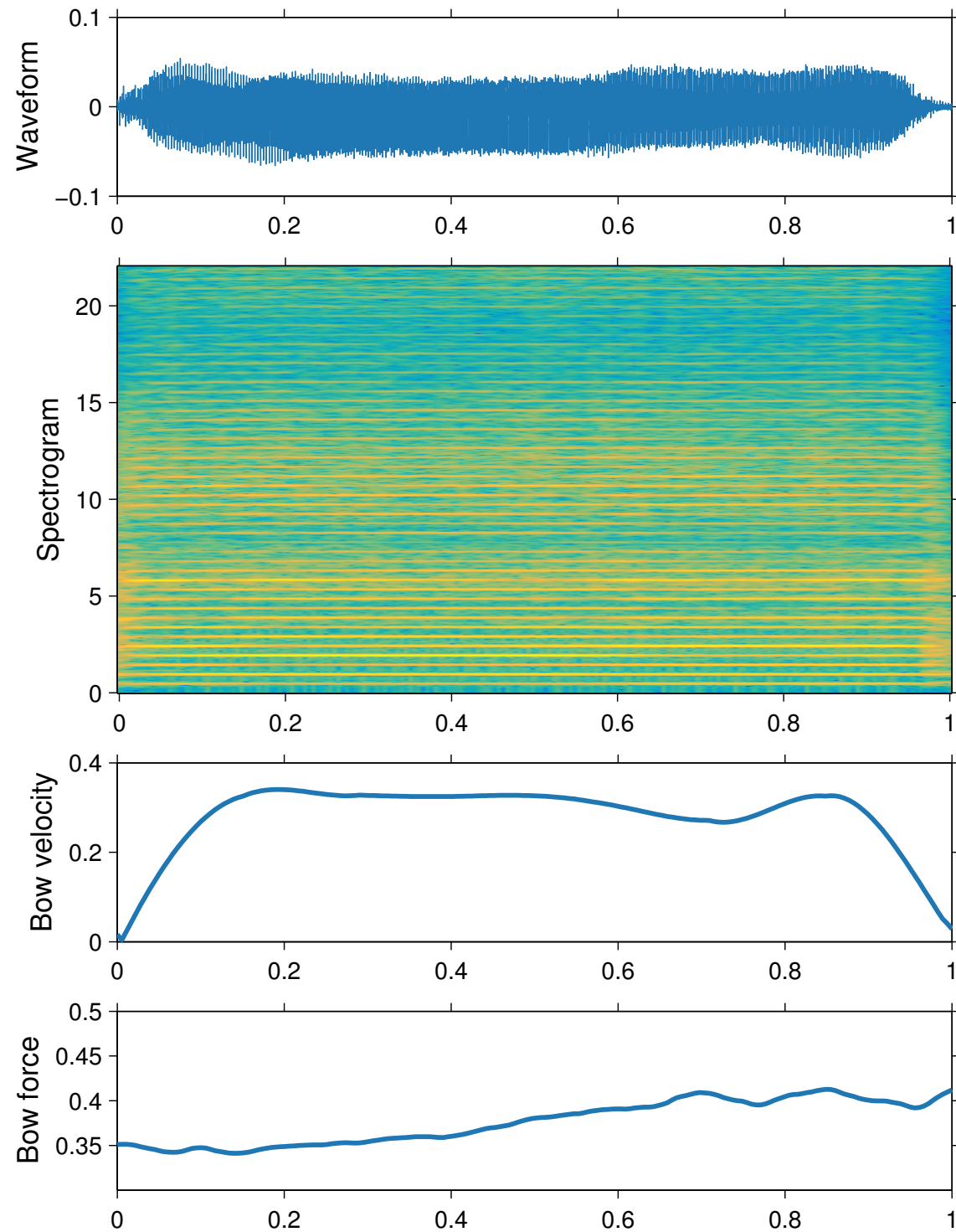
Background: **MUSMAP**



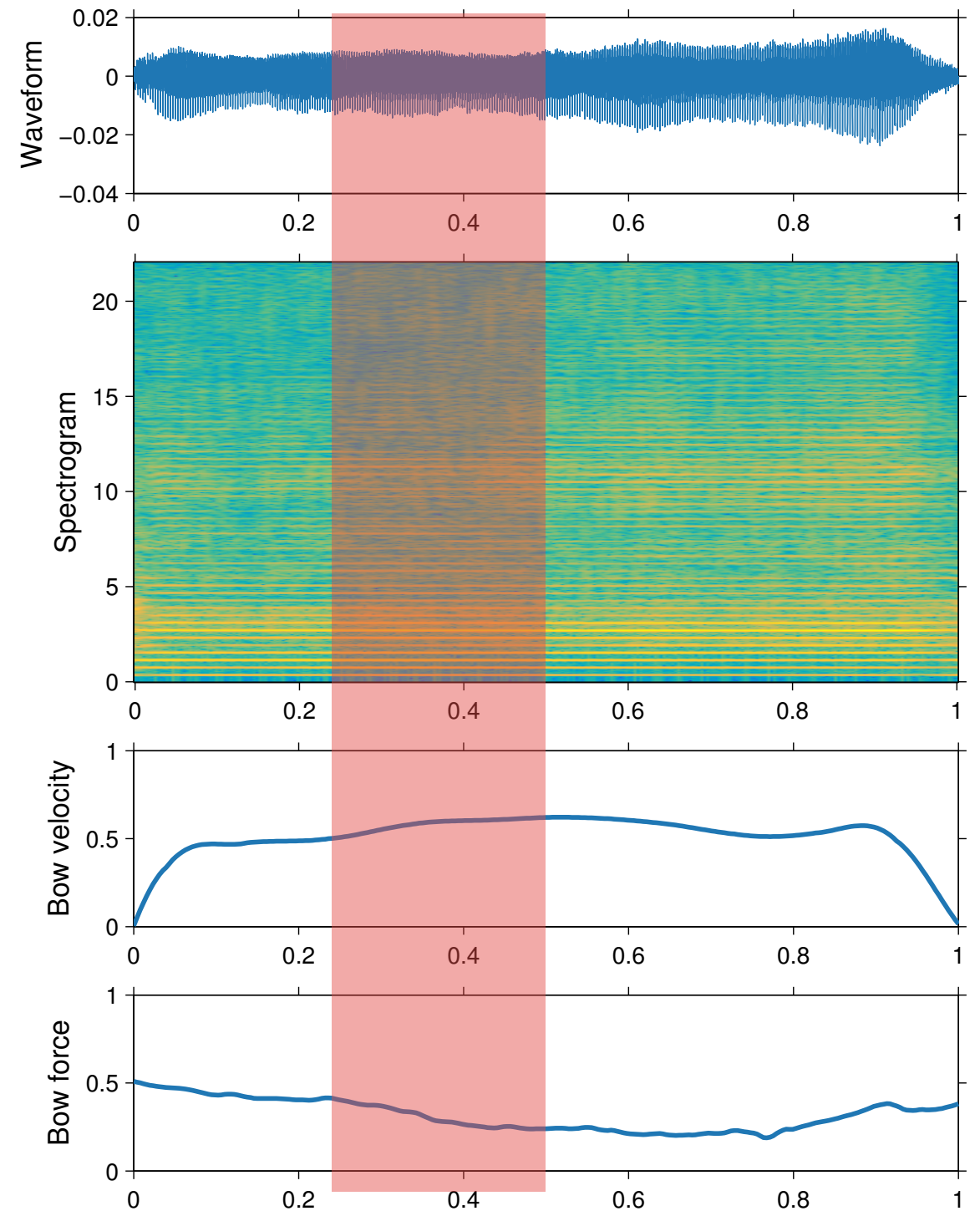
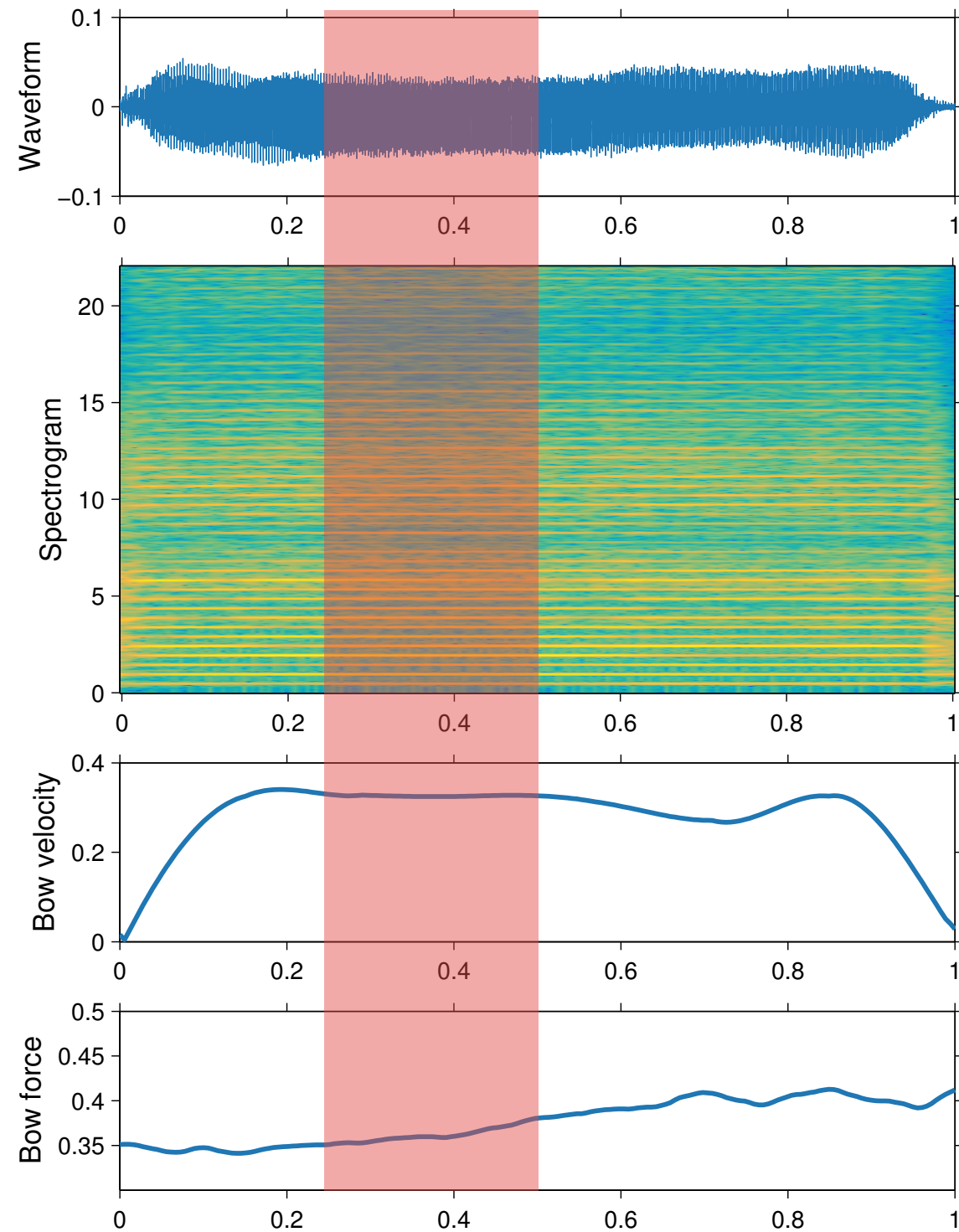
Background: **MUSMAP**



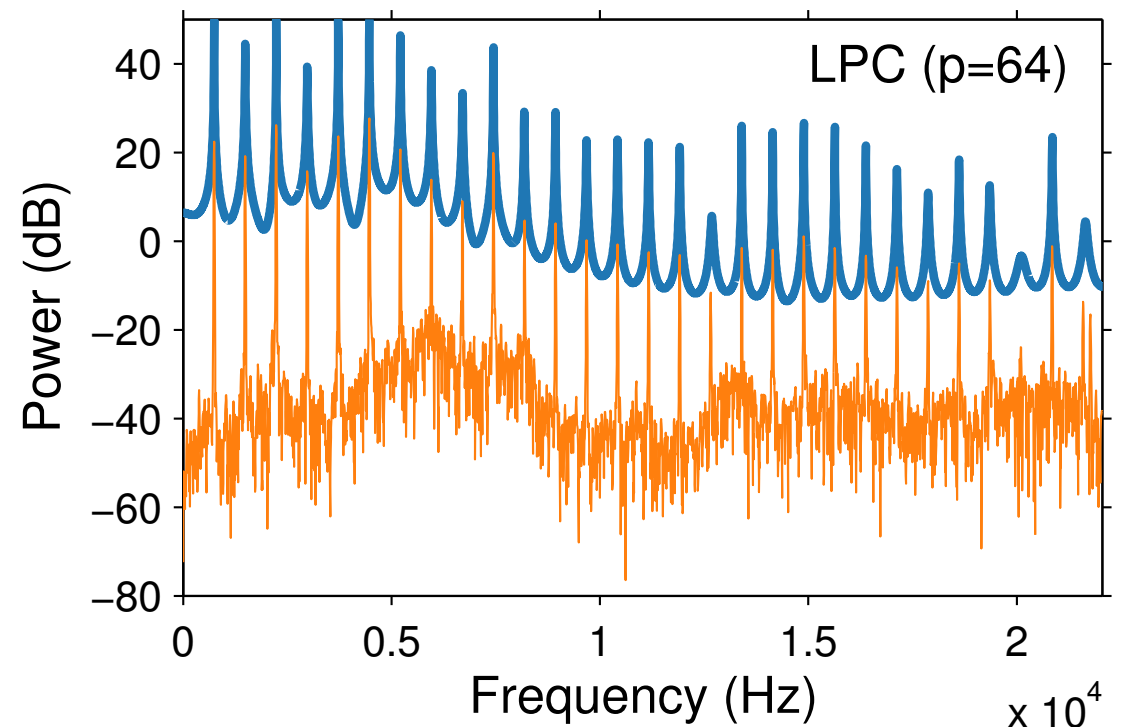
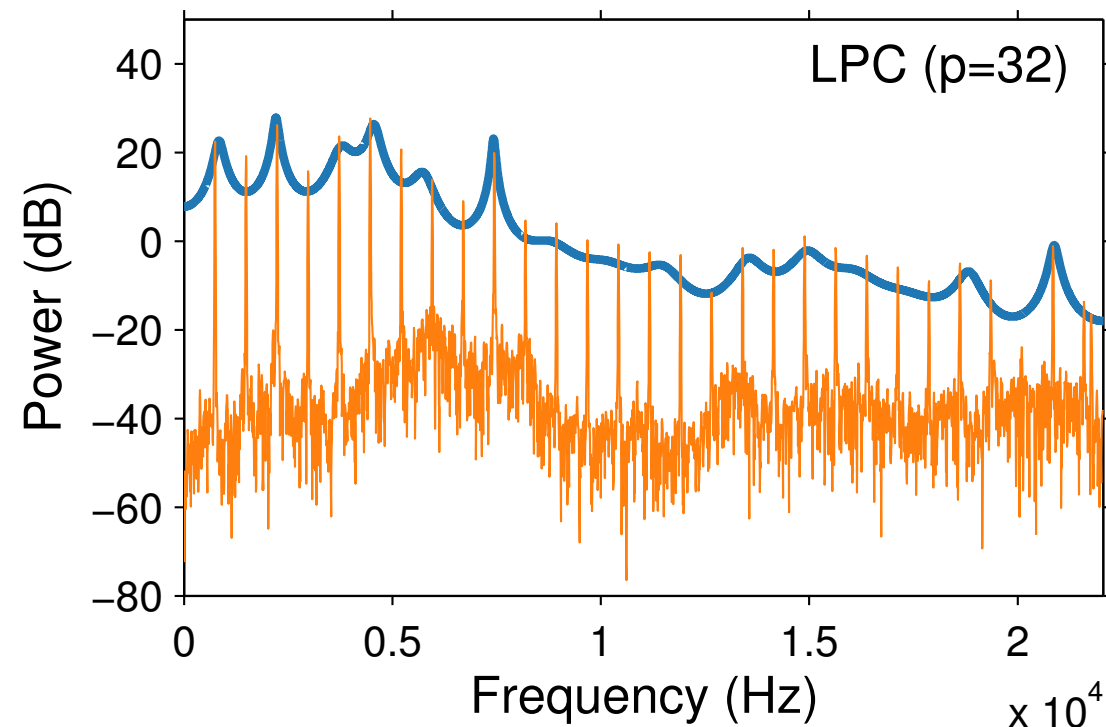
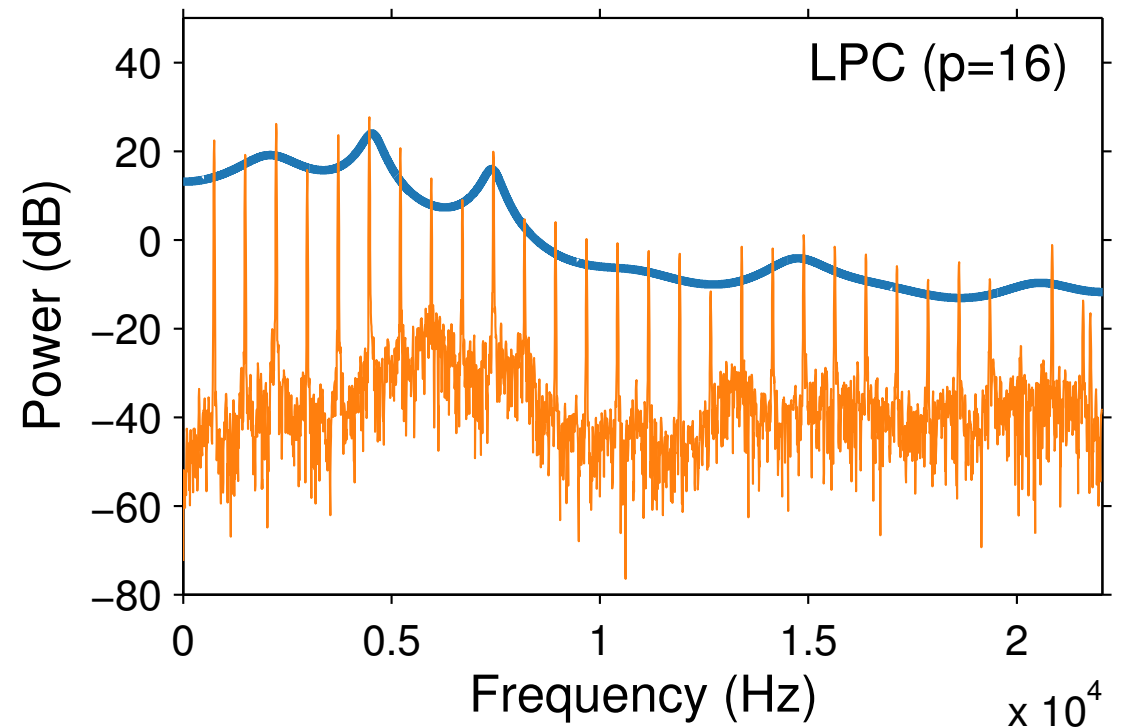
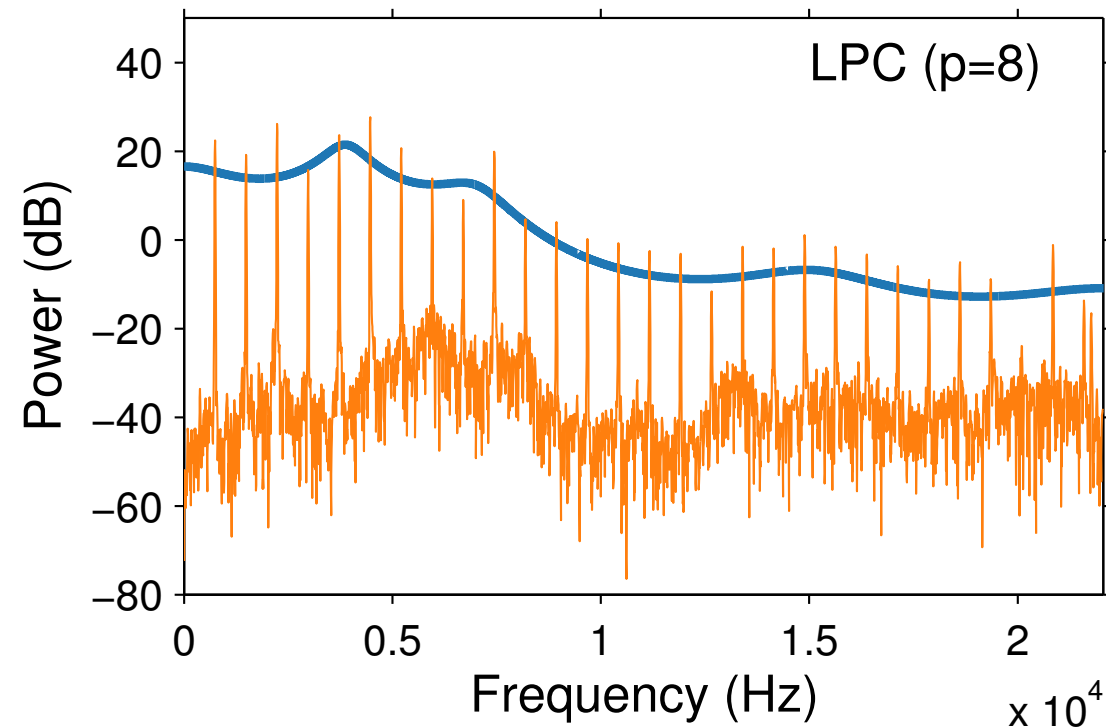
What does a violin note look like?



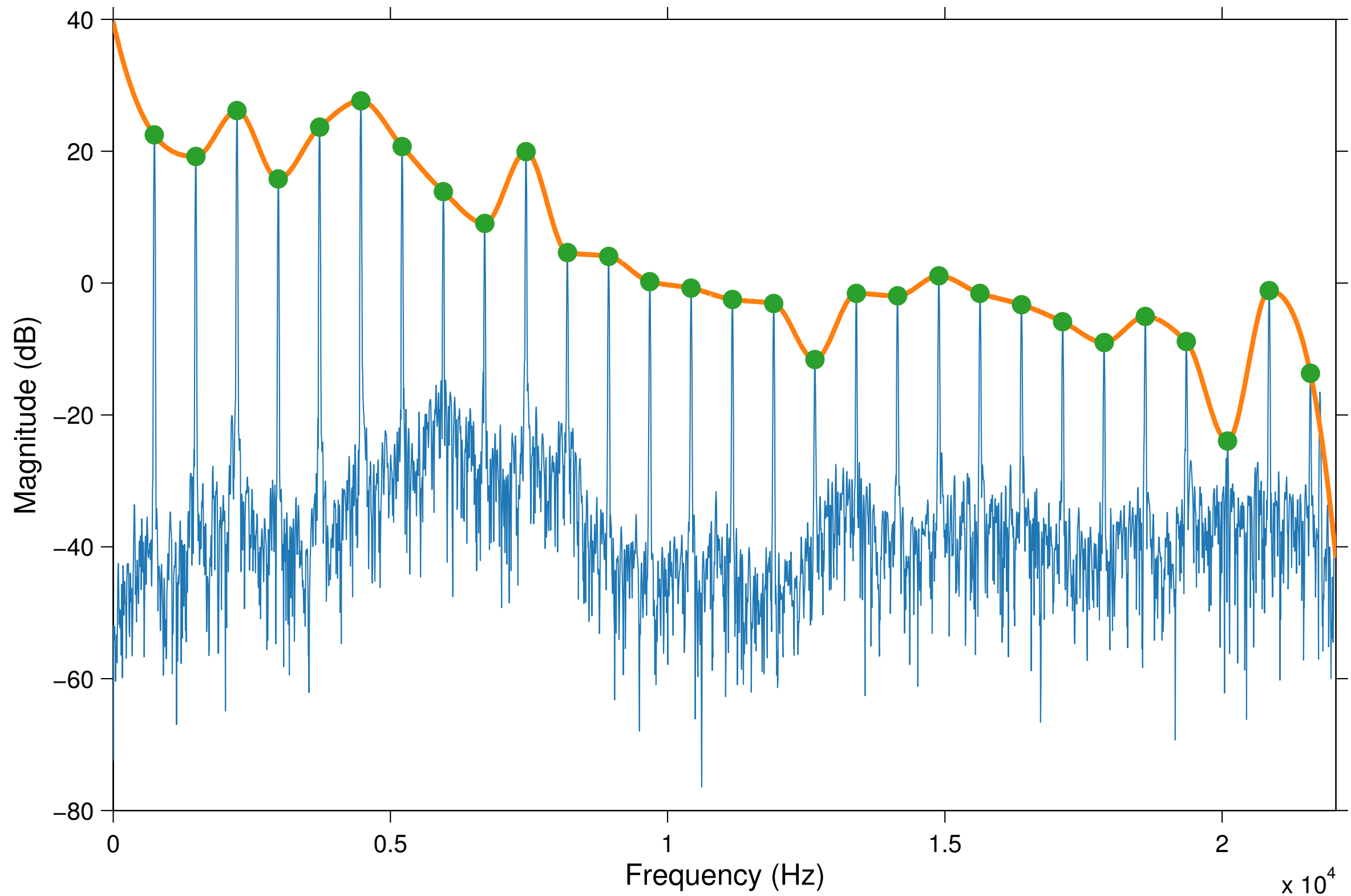
What does a violin note look like?



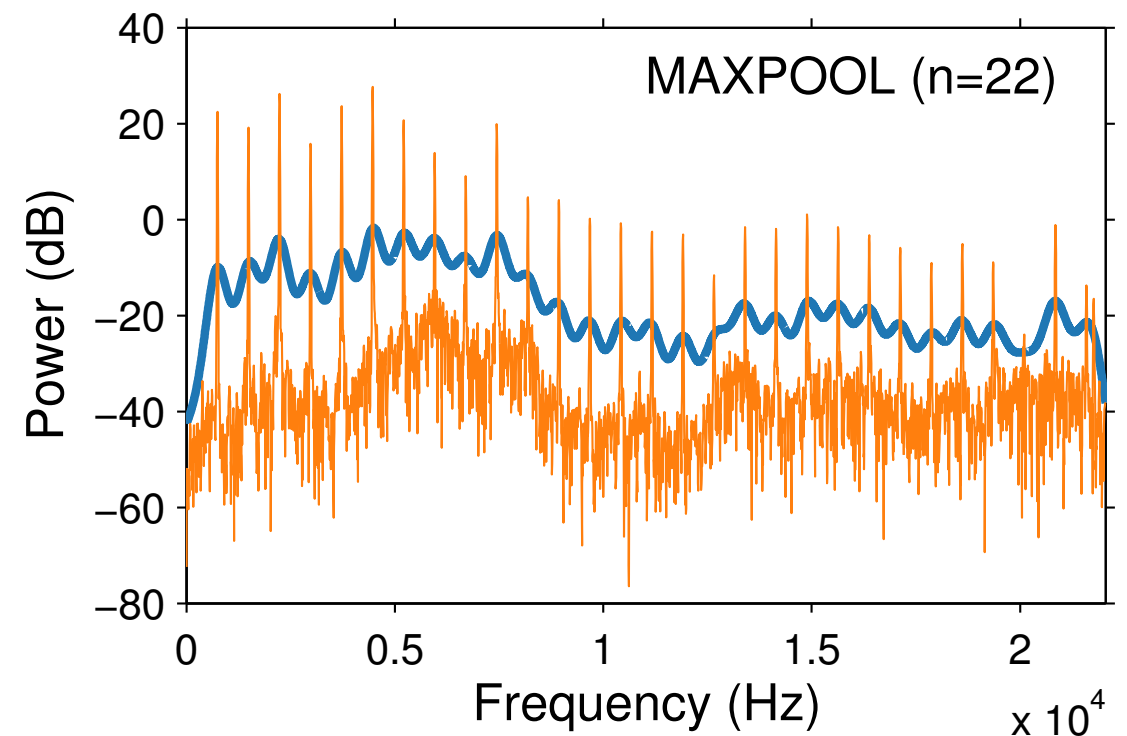
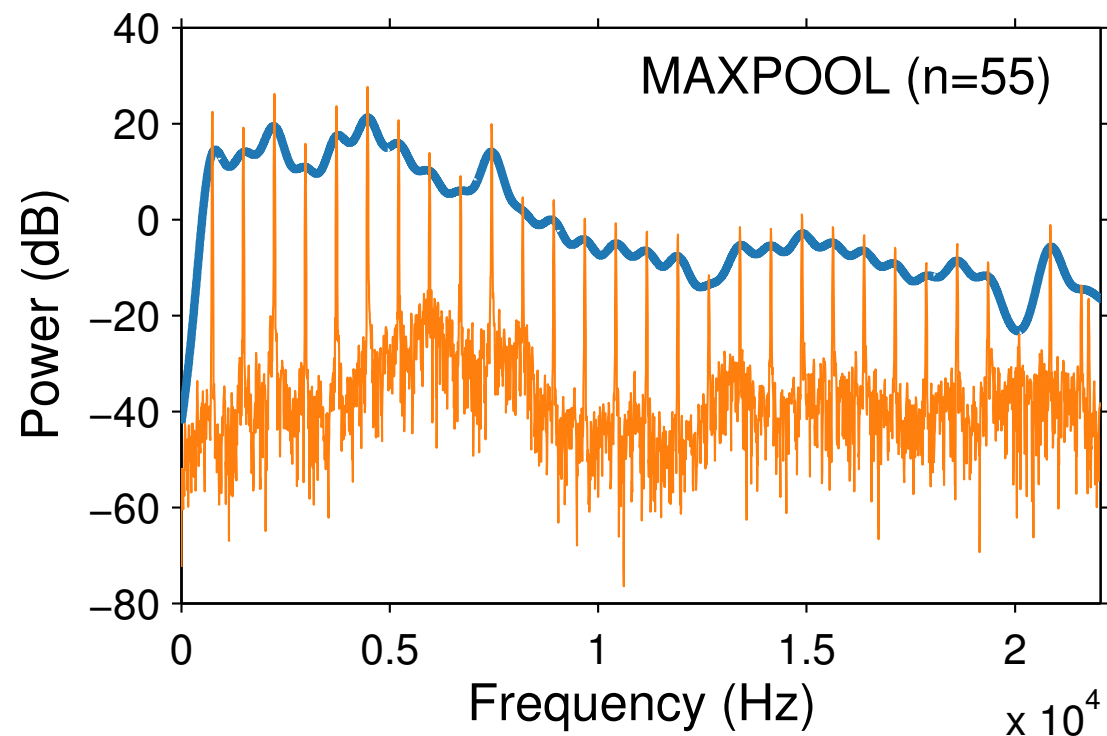
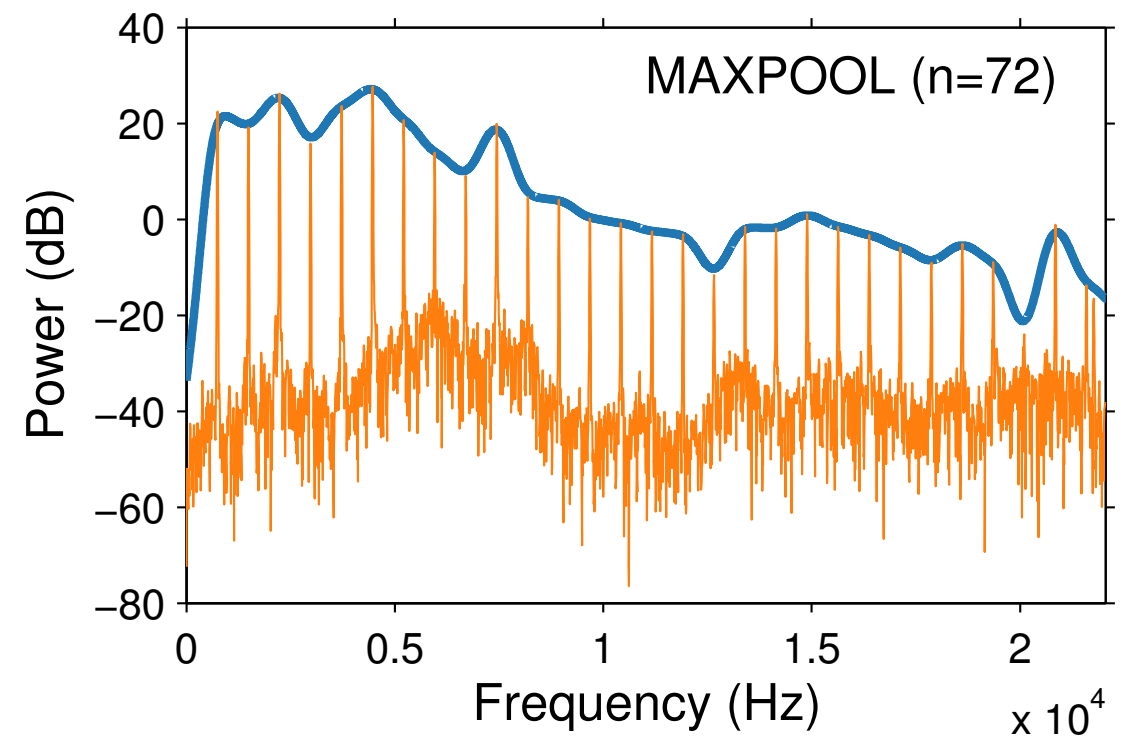
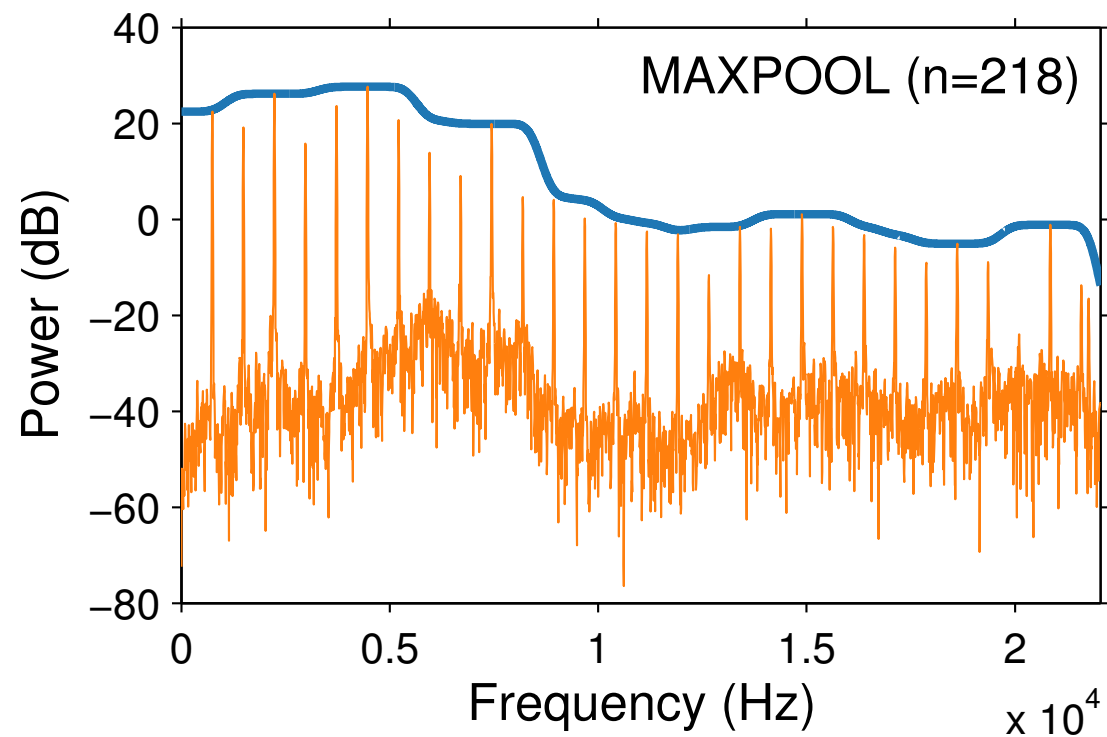
Spectral envelope extraction: **LPC**



Spectral envelope extraction: **PEAKPICK**

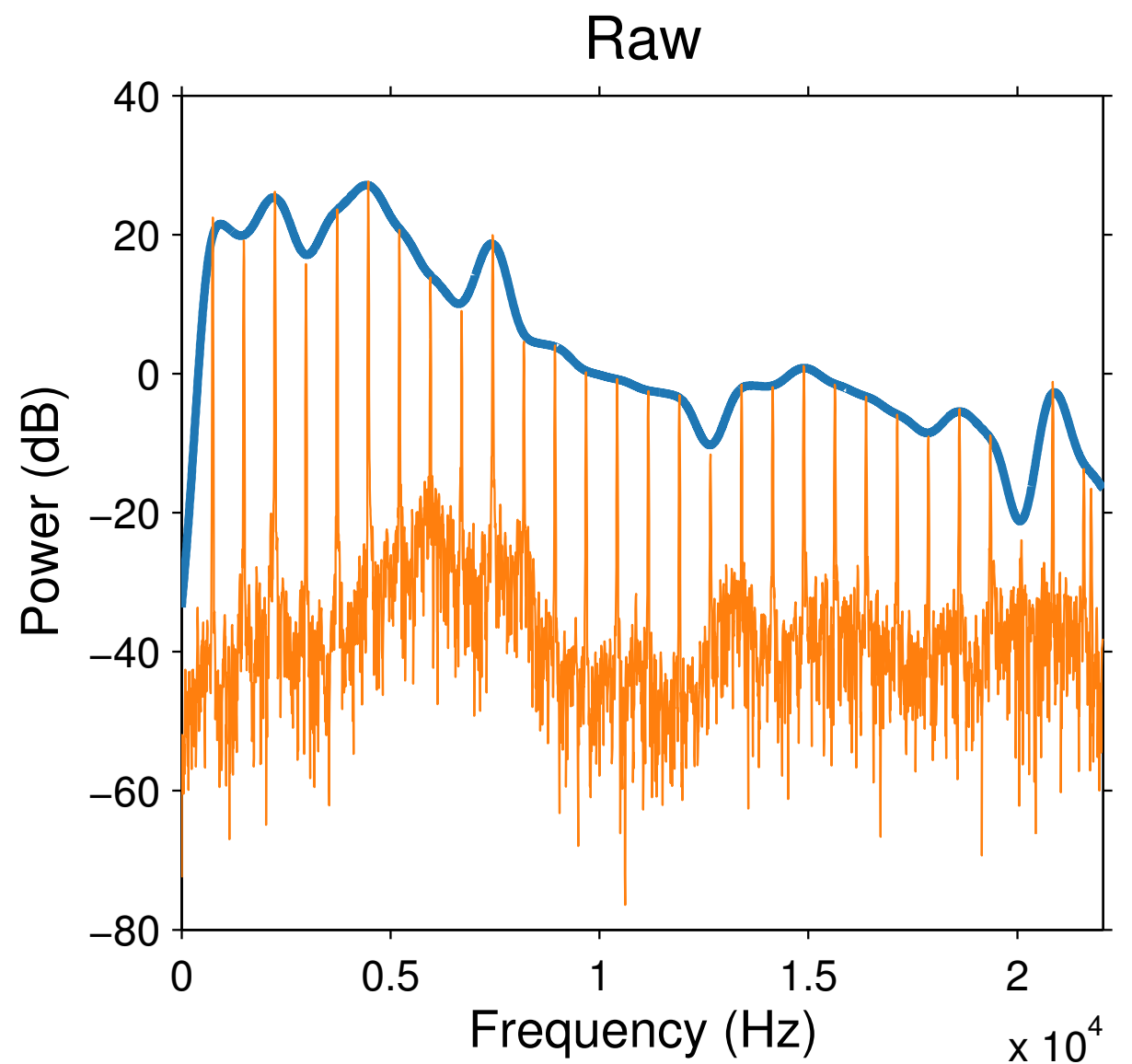
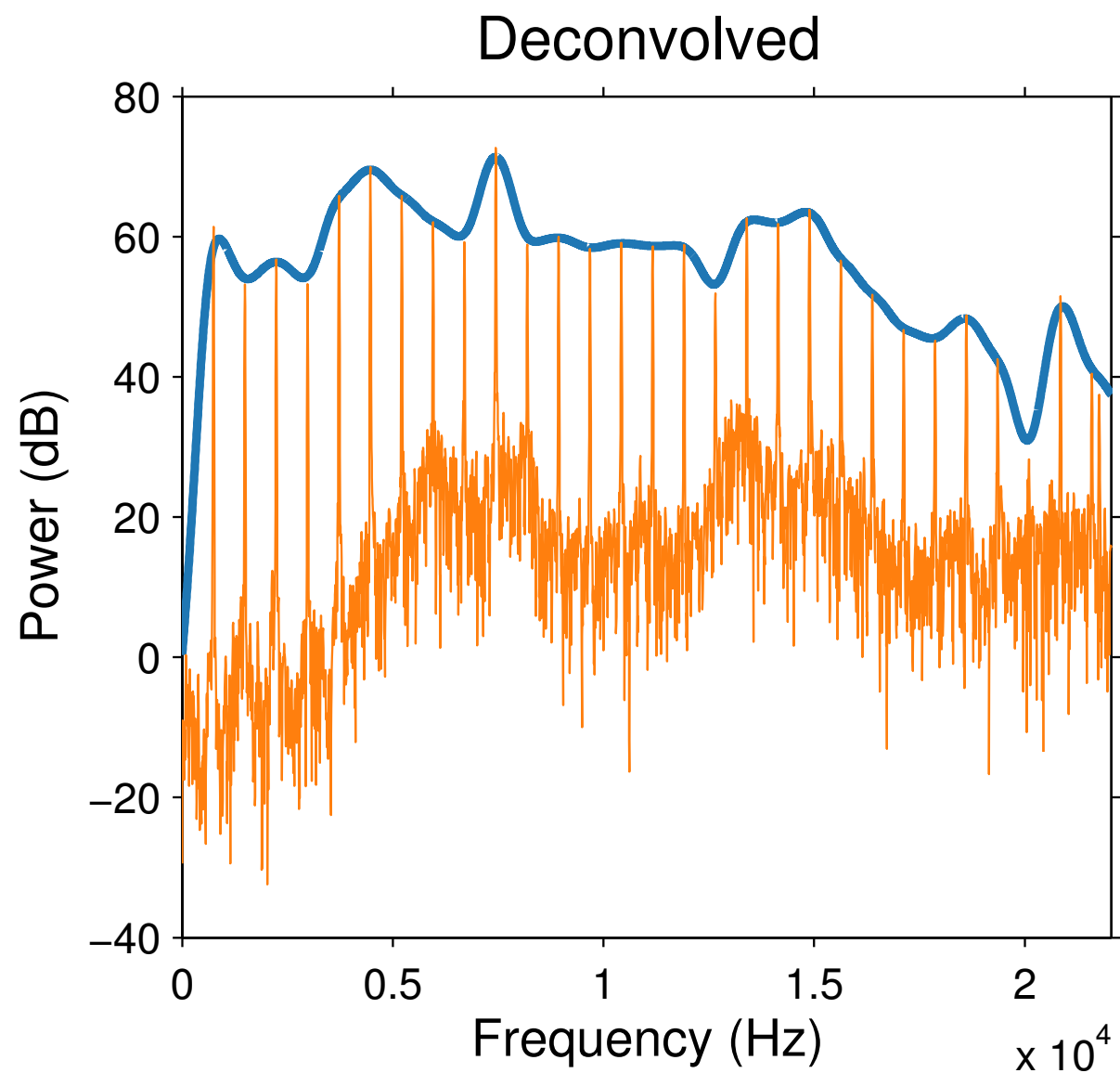


Spectral envelope extraction: **MAXPOOL**



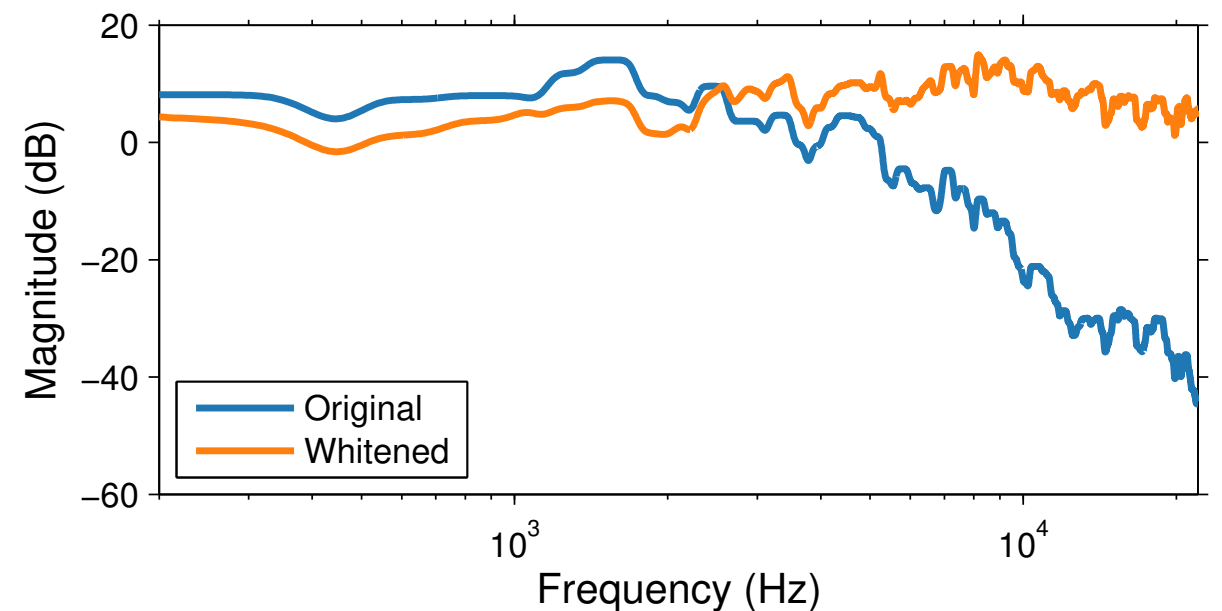
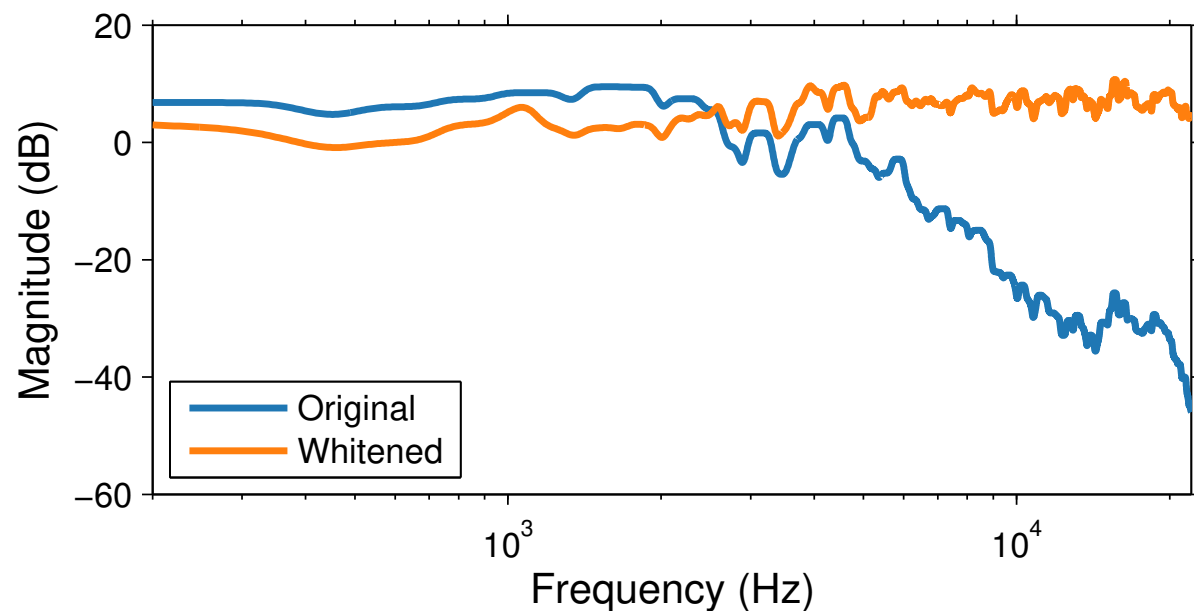
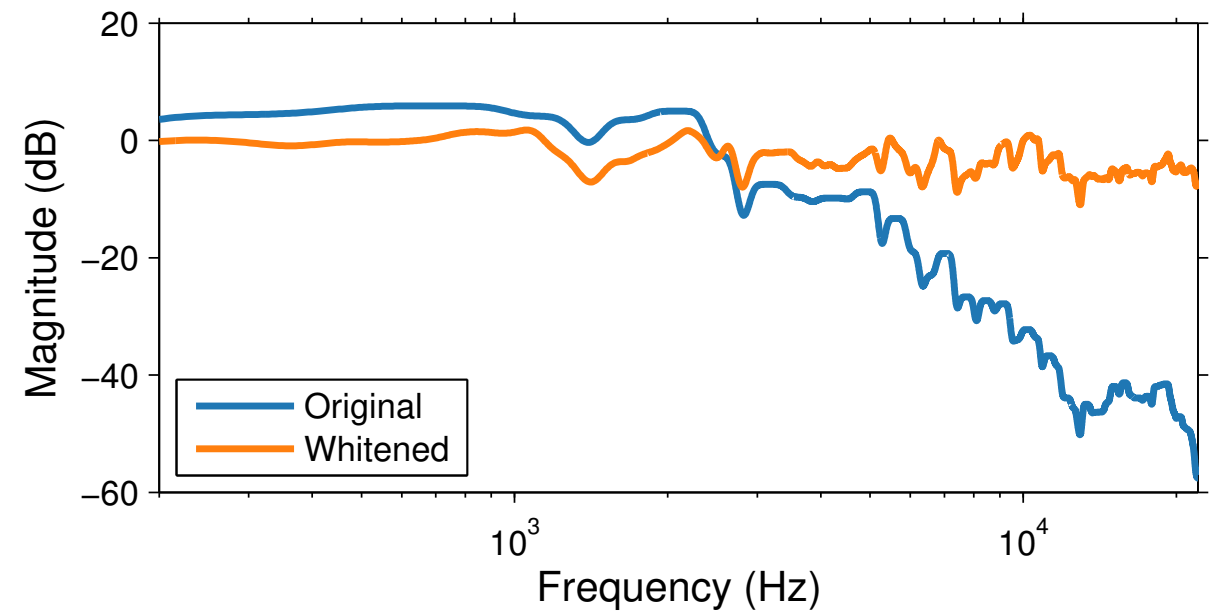
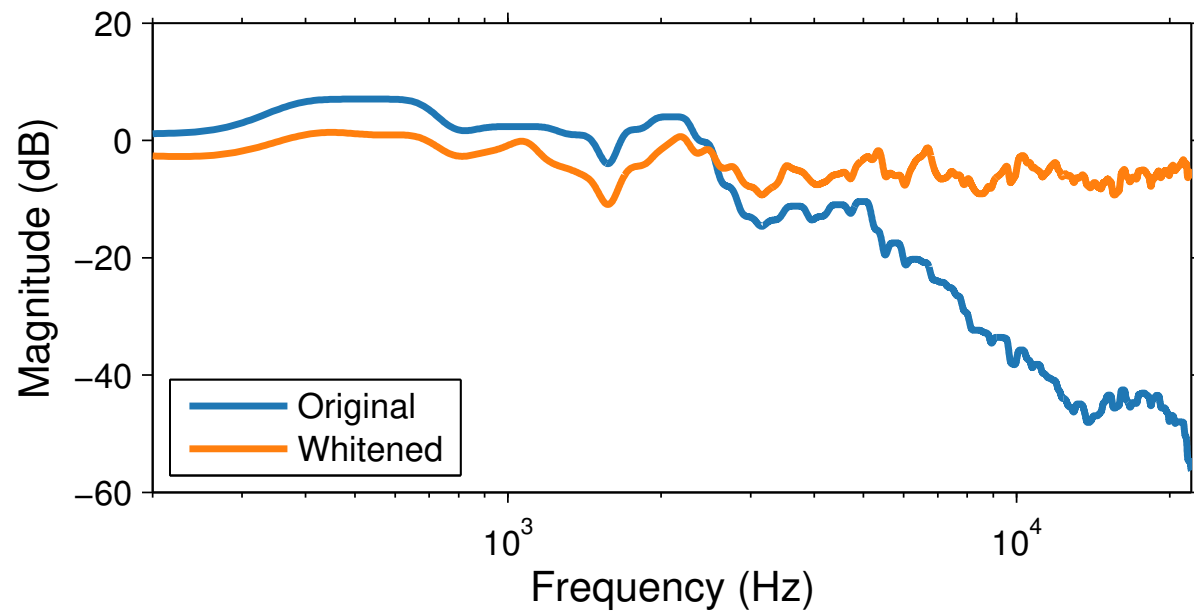
Spectral whitening

Admittance deconvolution

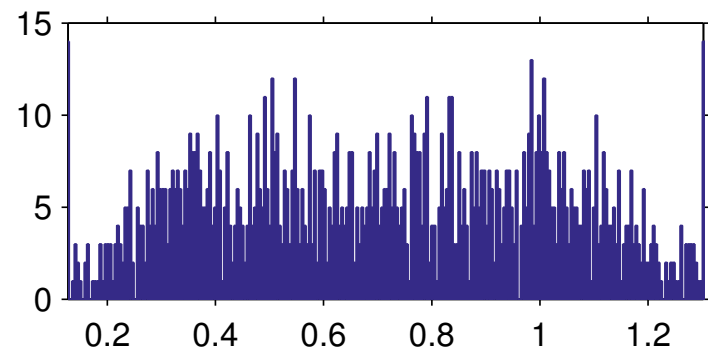


Spectral whitening

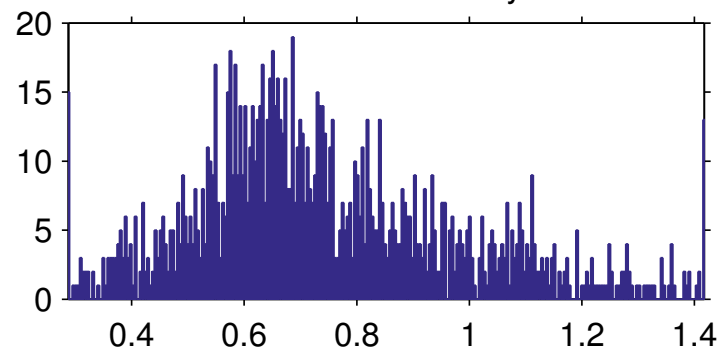
Data-driven normalization



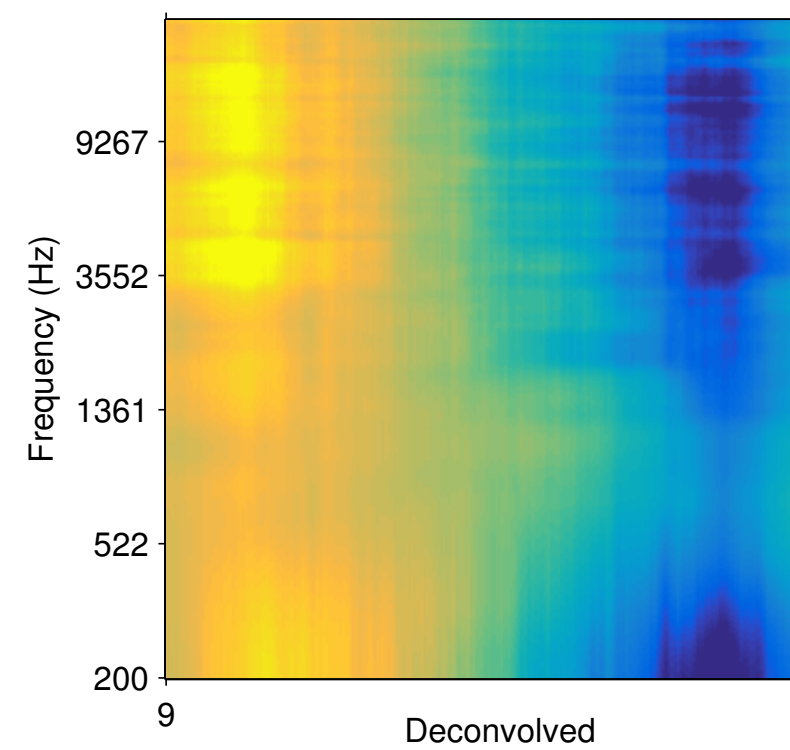
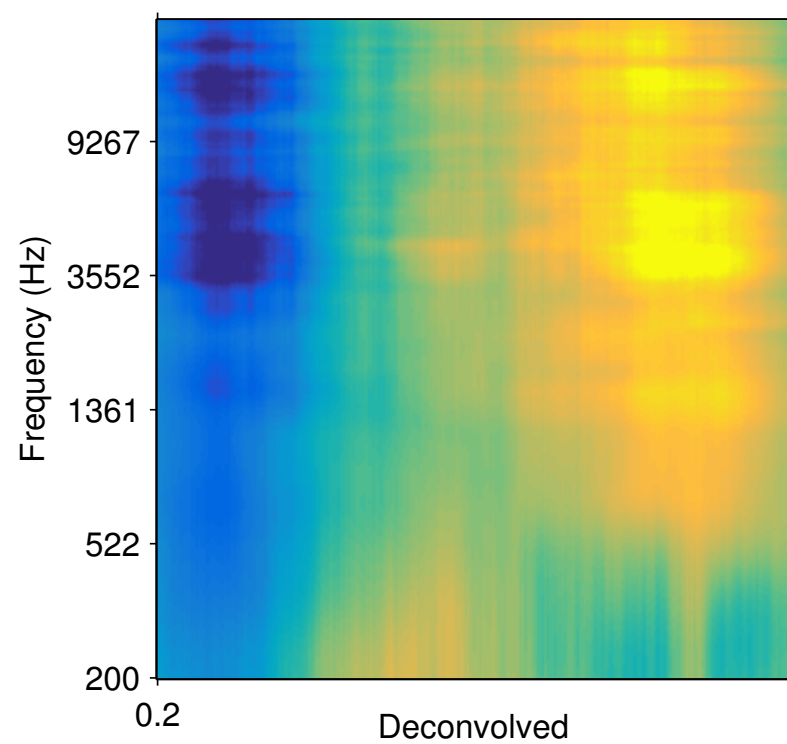
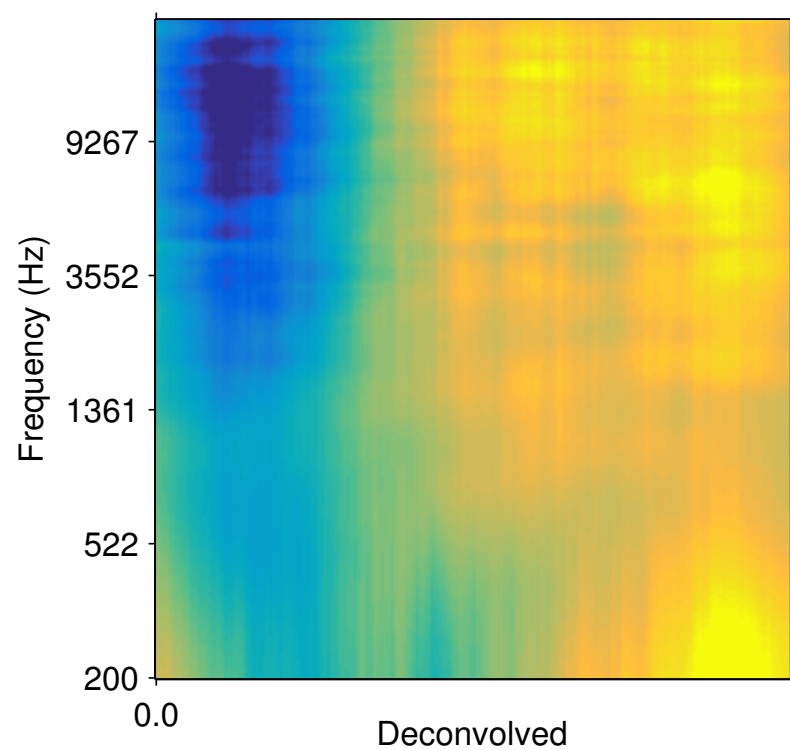
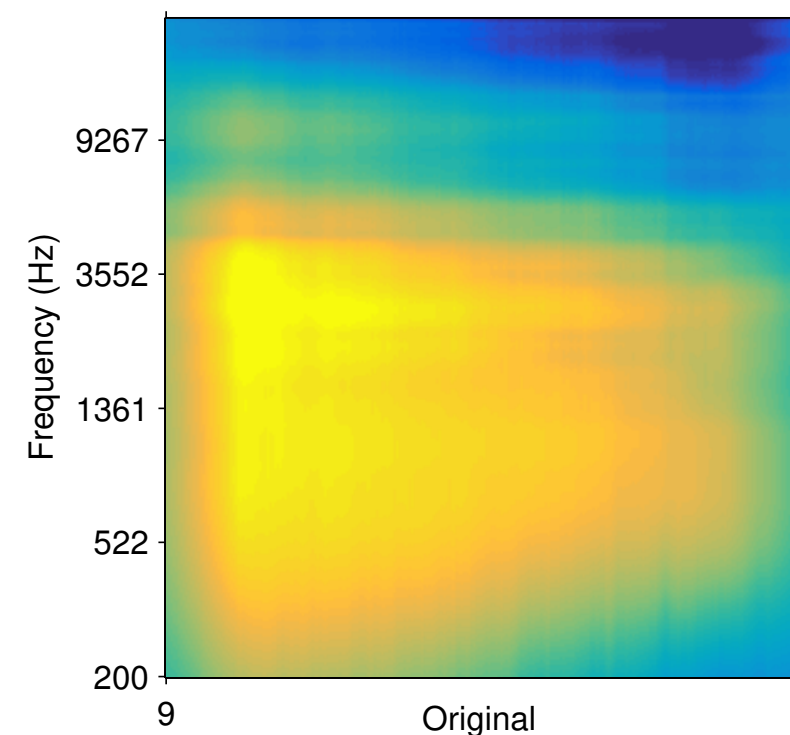
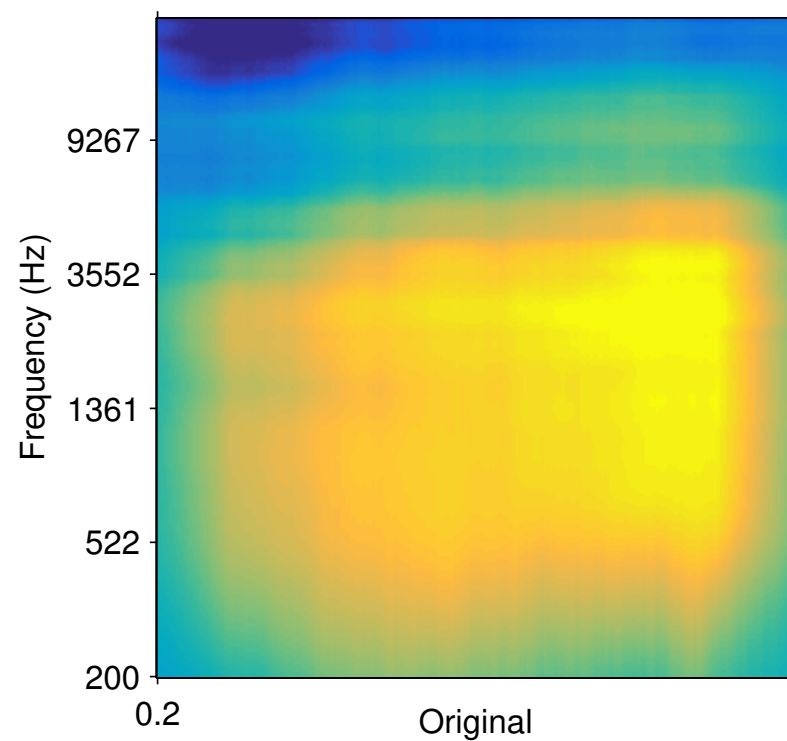
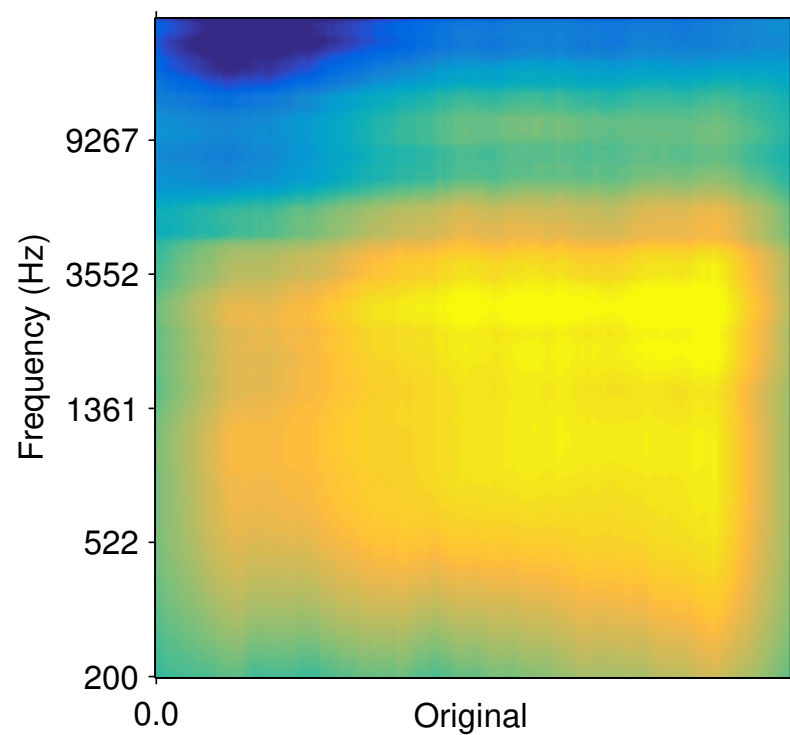
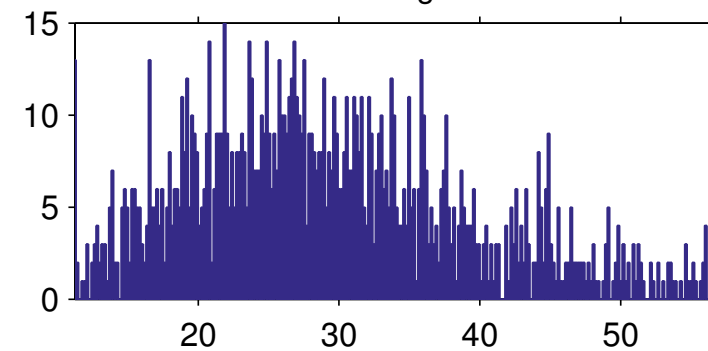
Mean bow force



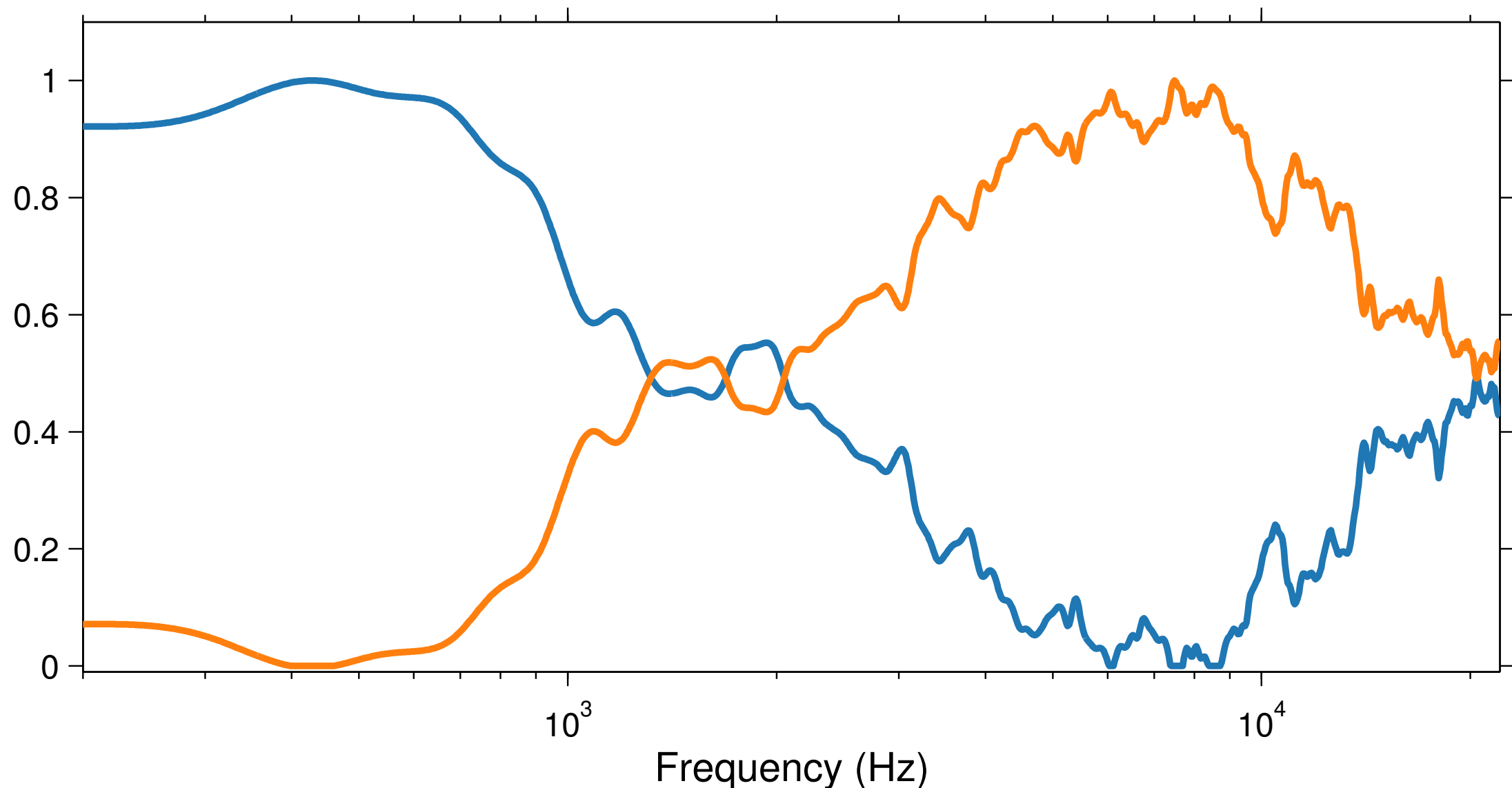
Mean bow velocity



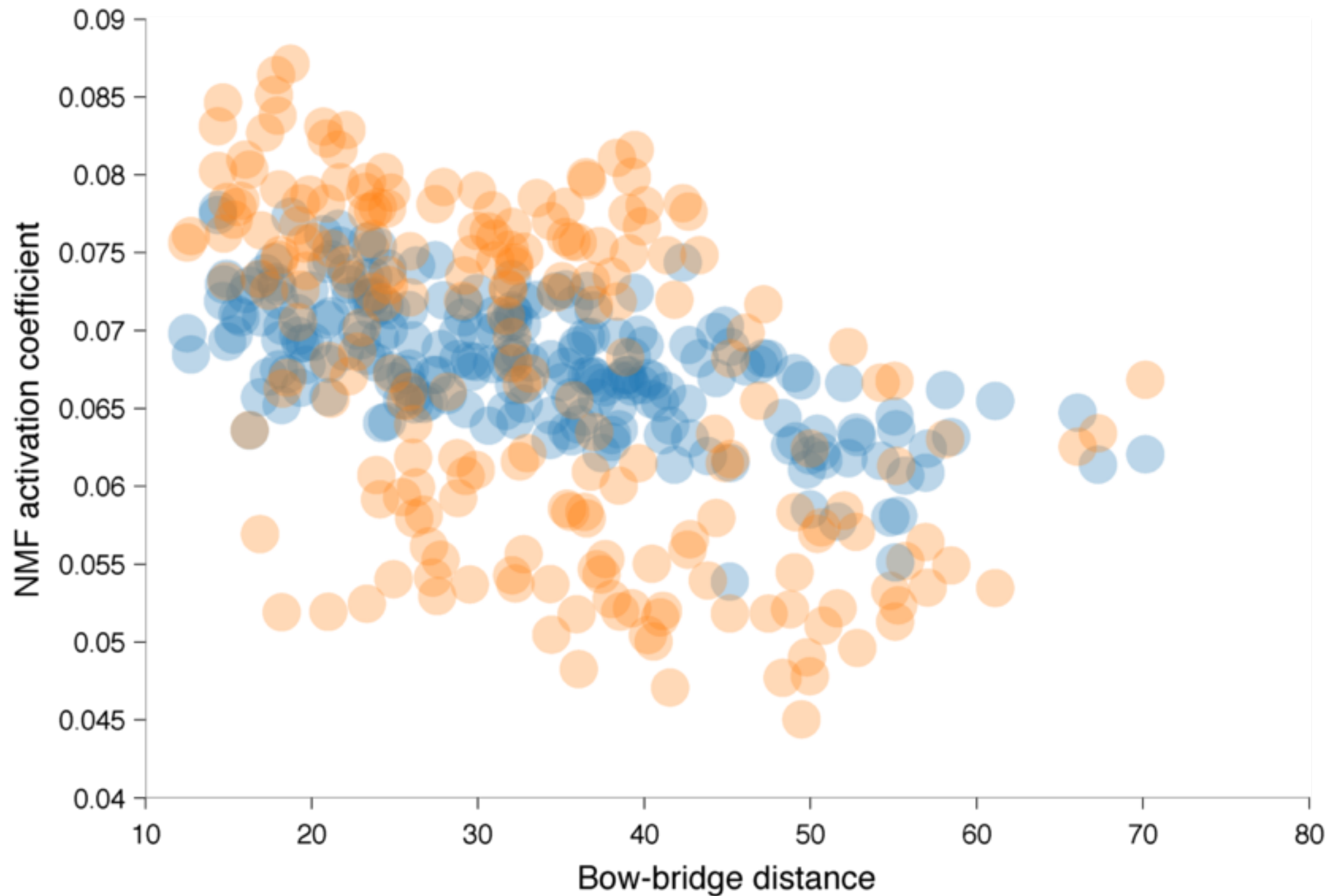
Mean bow bridge distance



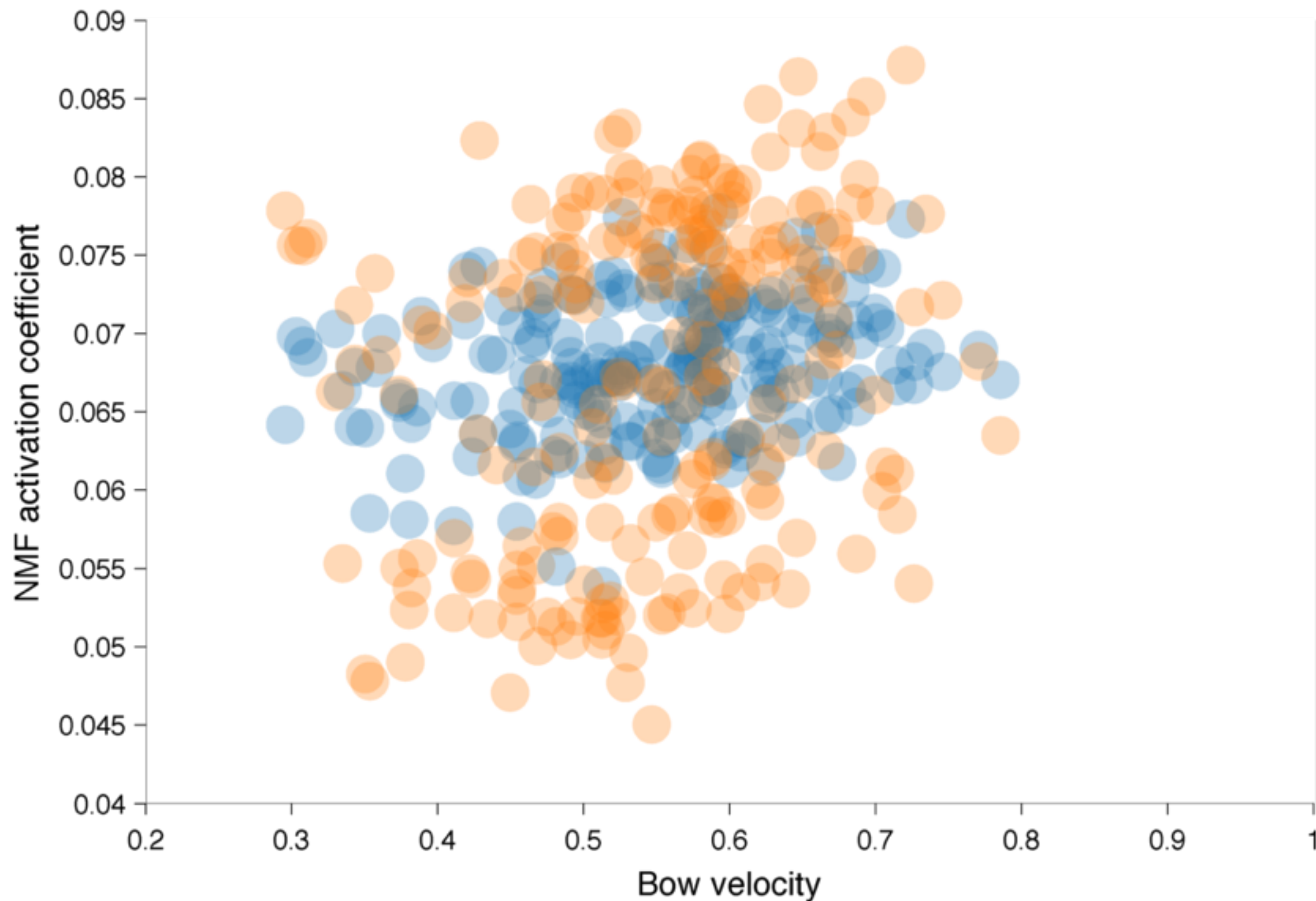
Learn convolutive templates through
Non-Negative Matrix Factorization (**NMF**)
on the log-spectrum (where chained filters are additive)



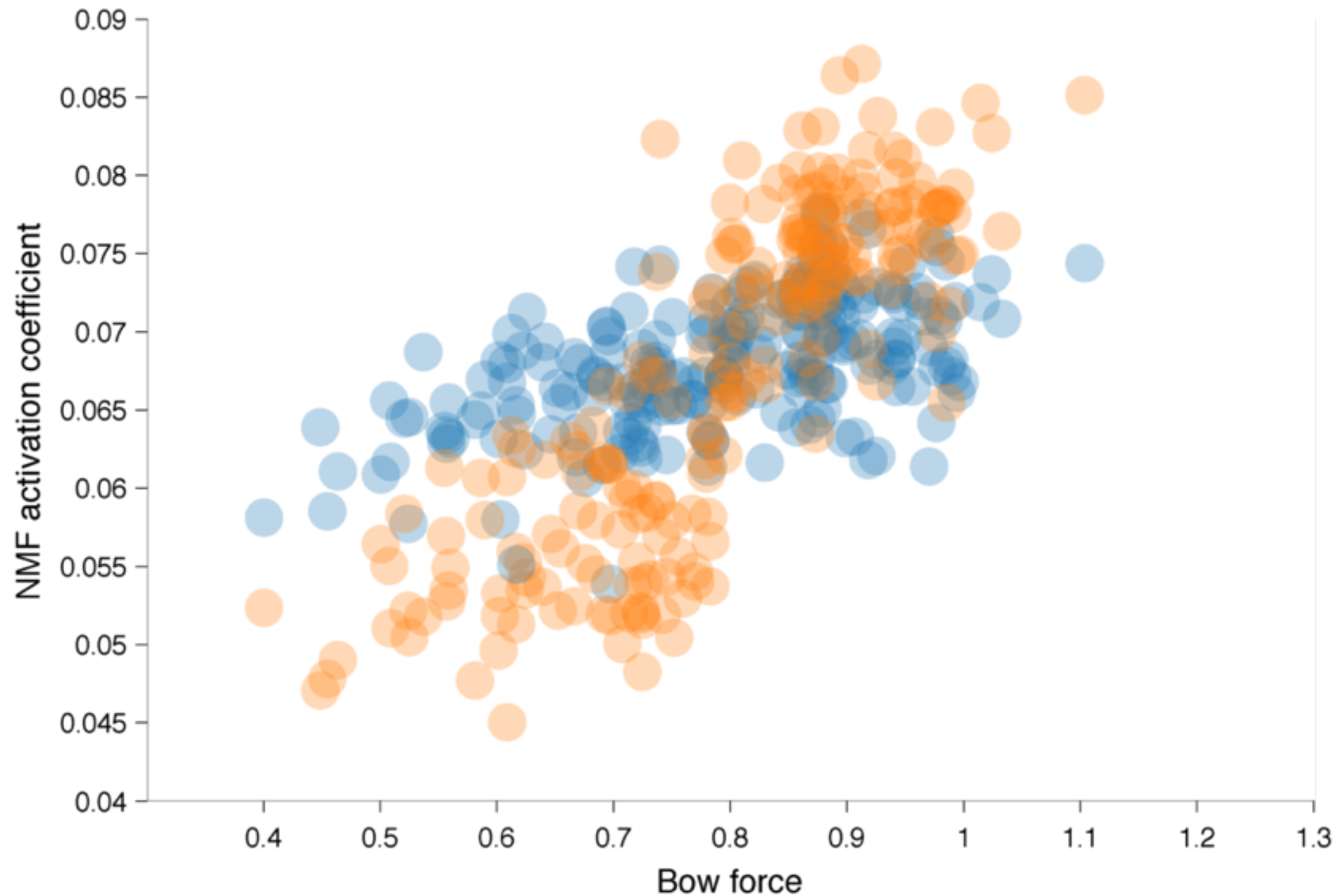
Distribution of NMF activations



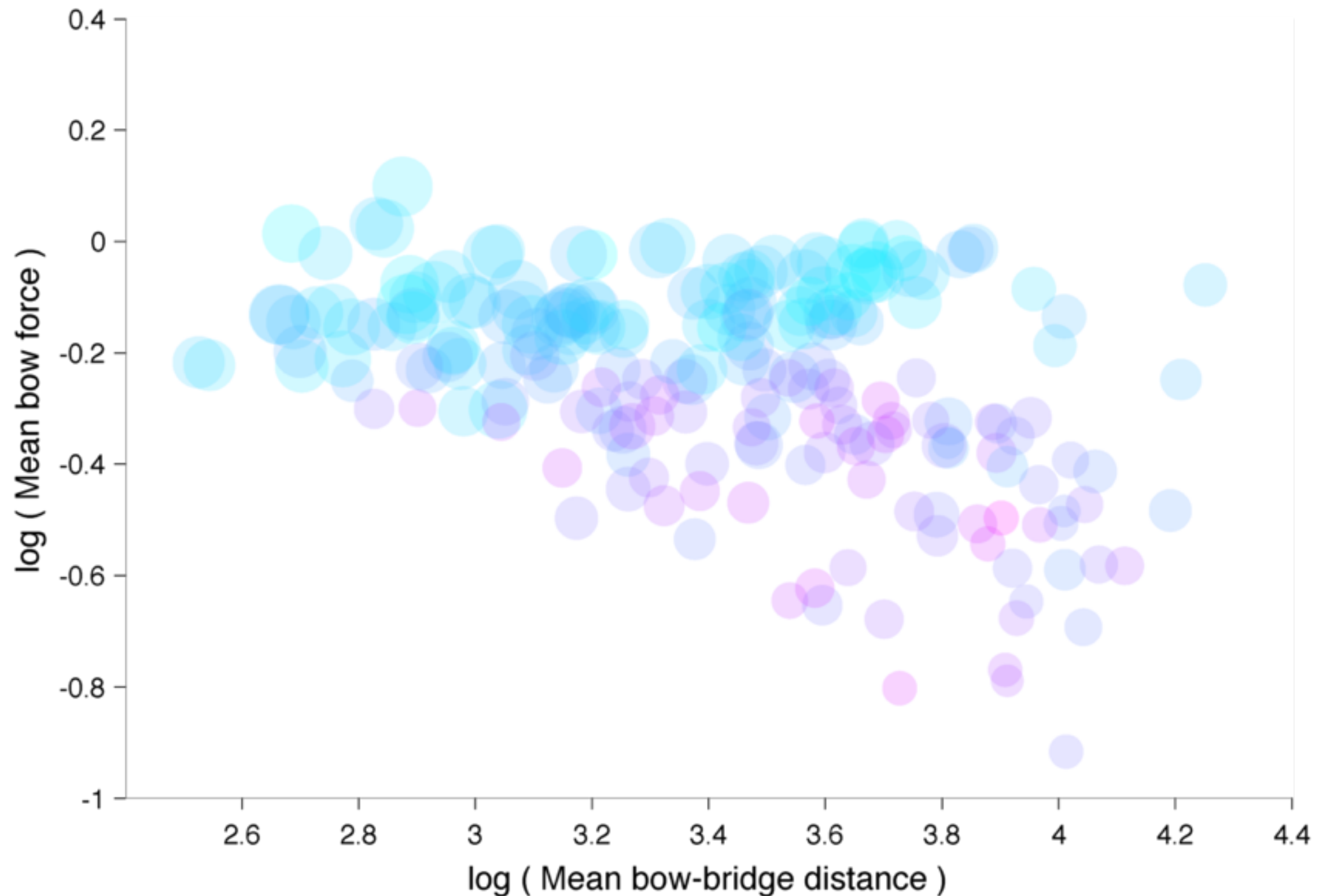
Distribution of NMF activations



Distribution of NMF activations



Ratio and sum of NMF activations



Thanks!



Quim Llimona

MUMT 605 Final Project

December 18th, 2015

