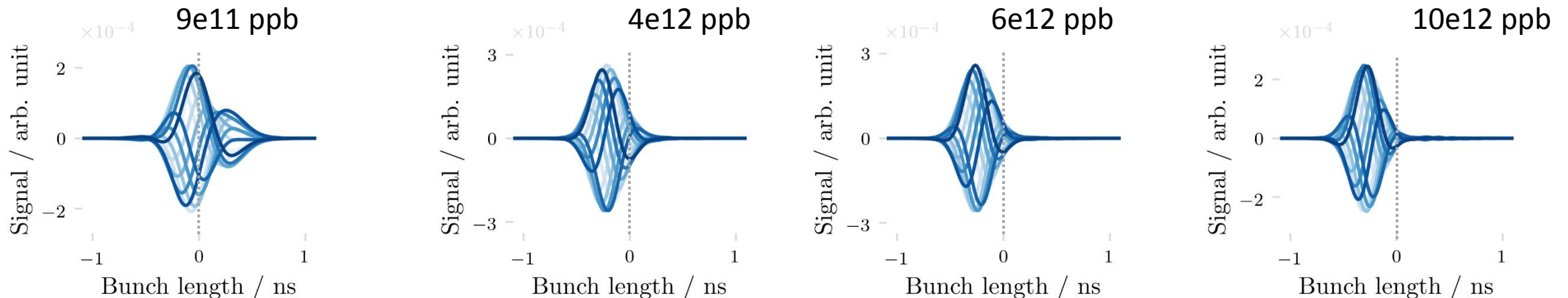


Introduction

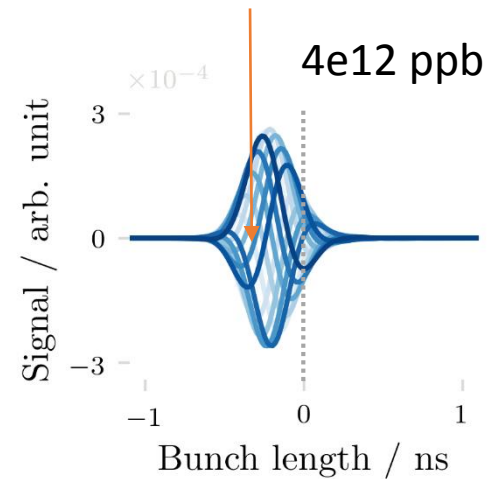
- TMCI far above intensity threshold was studied with PyHEADTAIL and DELPHI with a broadband resonator impedance model
 - See "Comparing DELPHI and PyHEADTAIL in the Head-Tail, TMCI and Beam break-up like regimes" at 180th HSC meeting: <https://indico.cern.ch/event/824835/>

- As the intensity increases, the bunch motion is pushed towards the tail



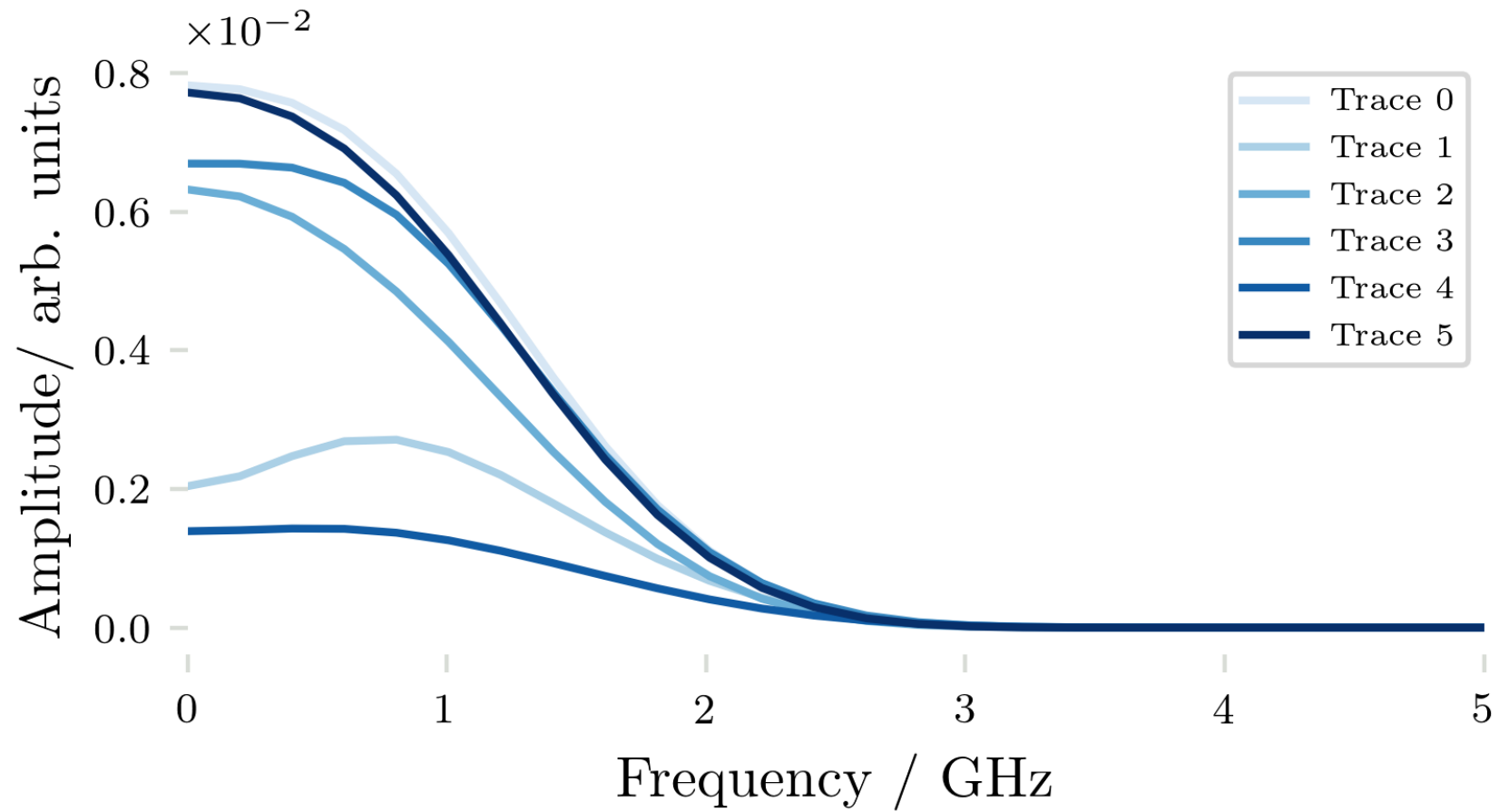
Introduction

- What happens to the intrabunch motion frequency ?

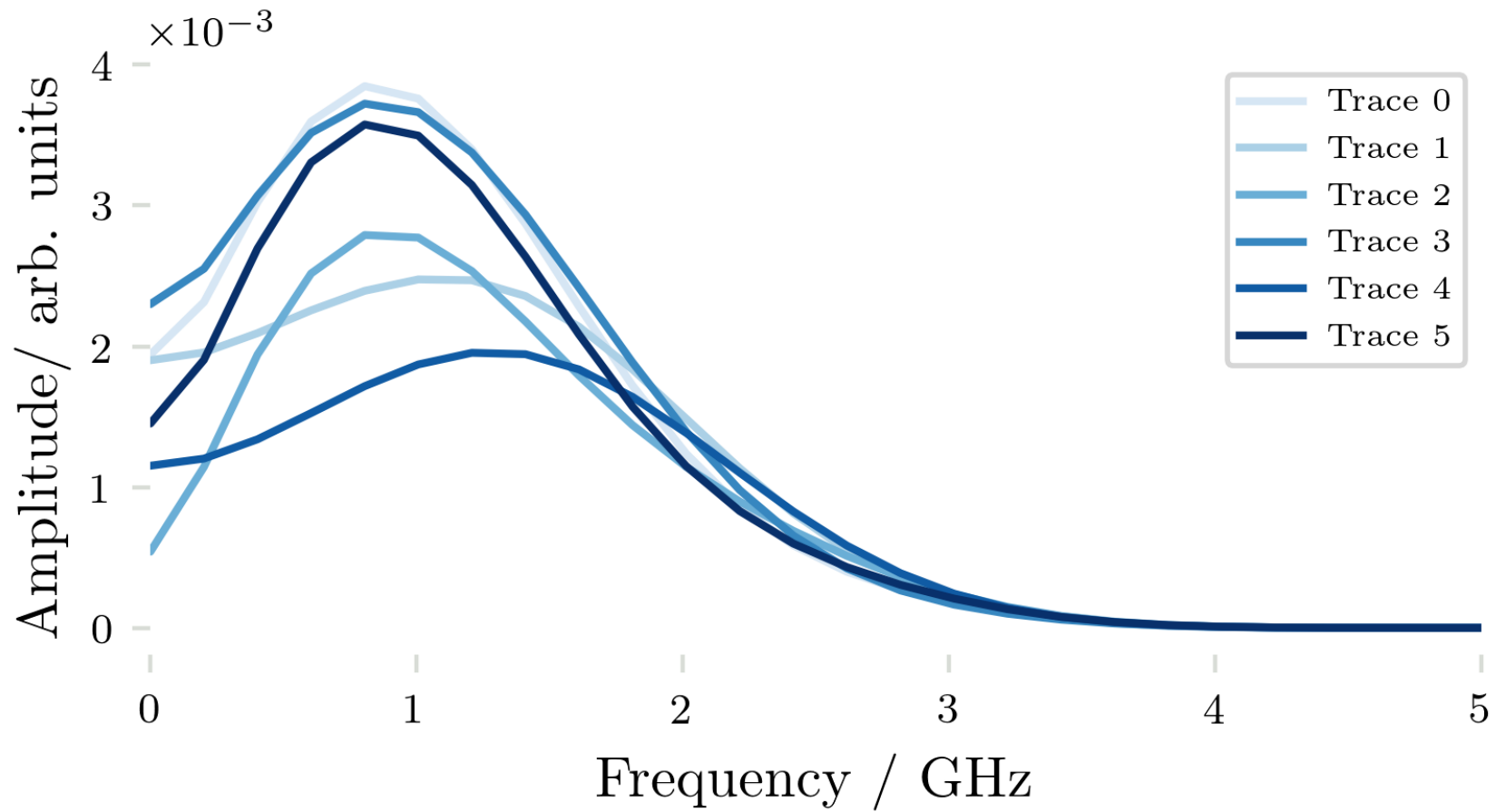


- Perform FFT of a few individual head-tail signals
- Plot the signal amplitude vs. frequency for increasing bunch intensities

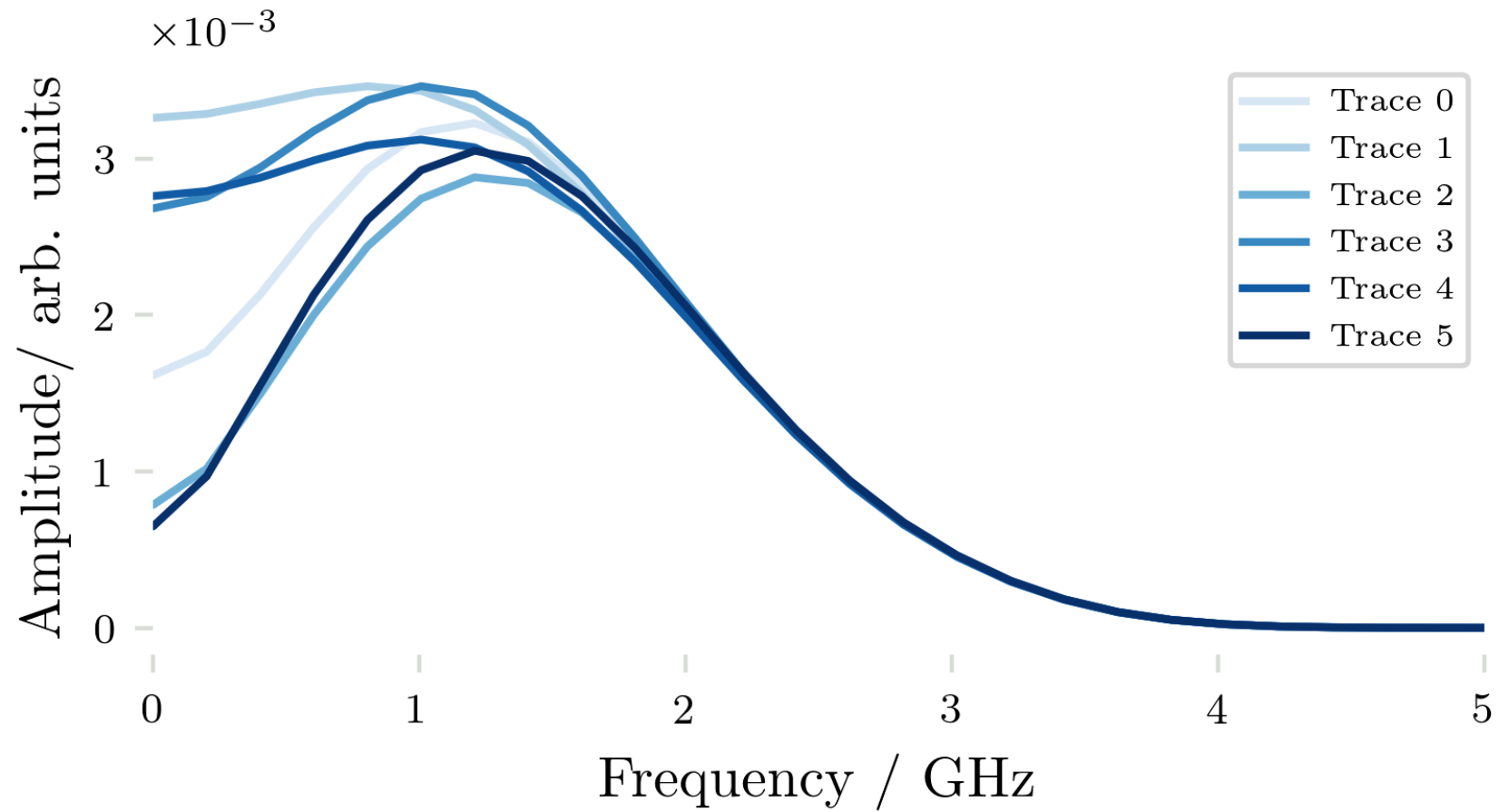
5e11 ppb



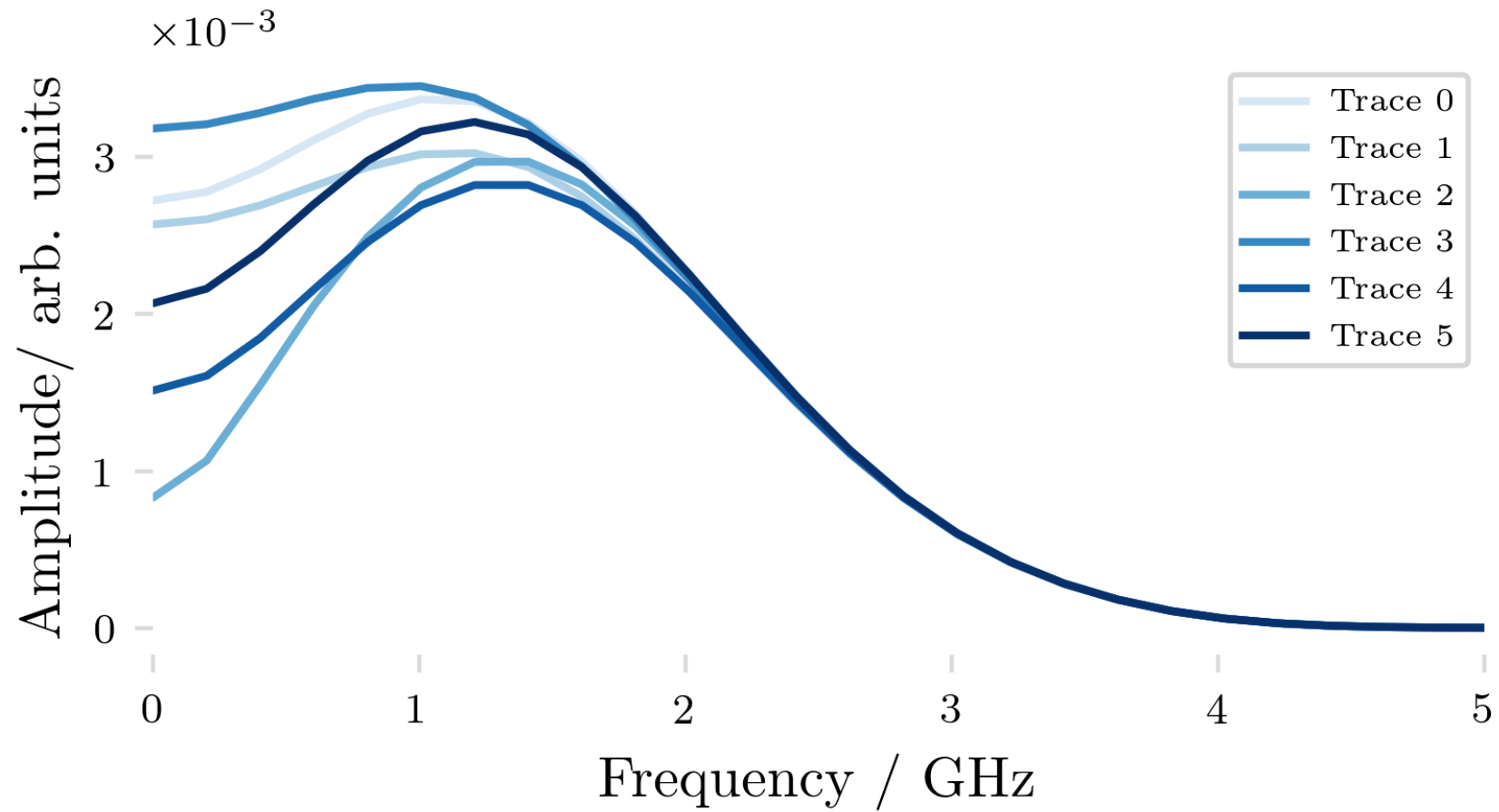
9e11 ppb



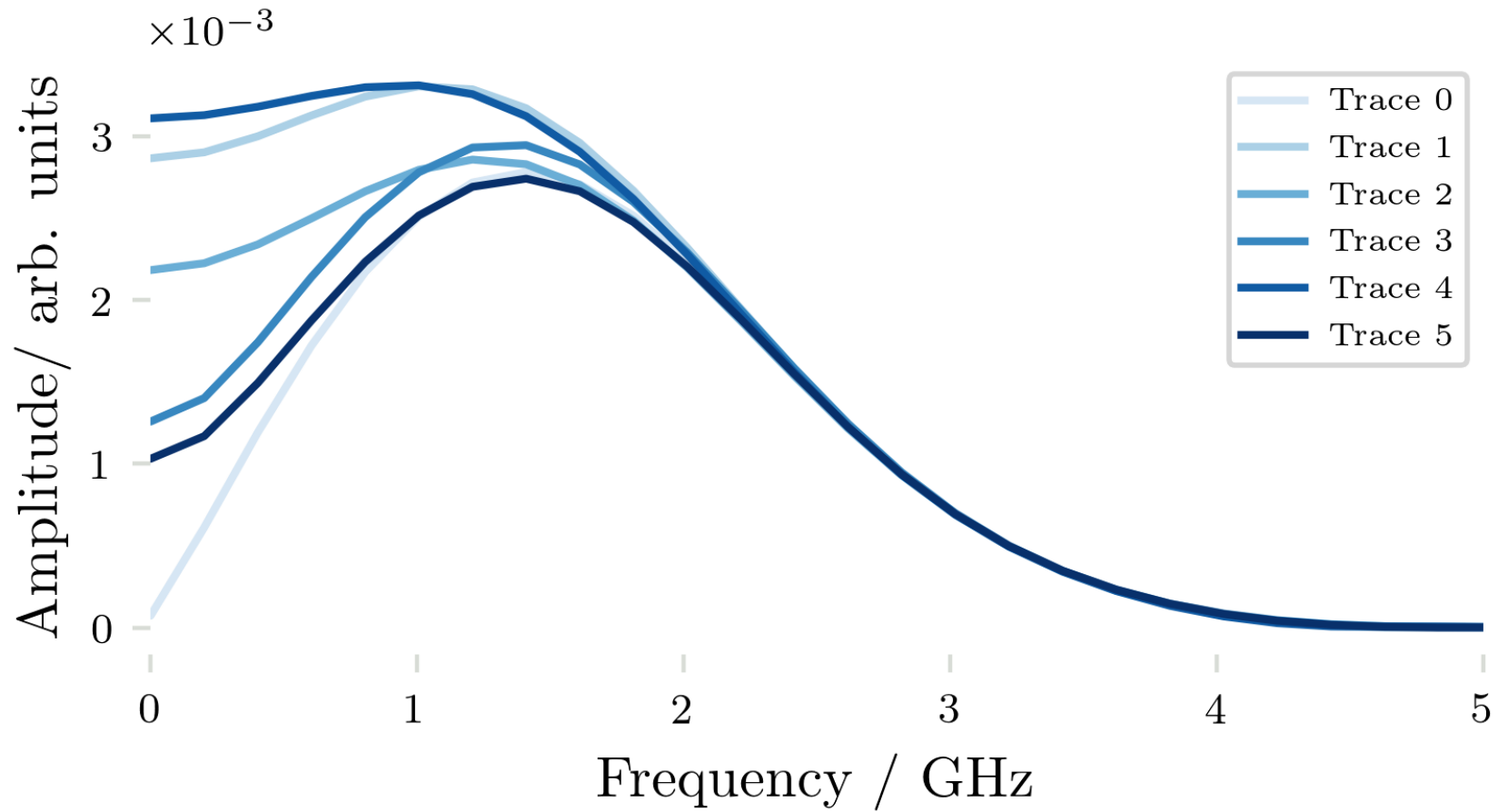
2e12 ppb



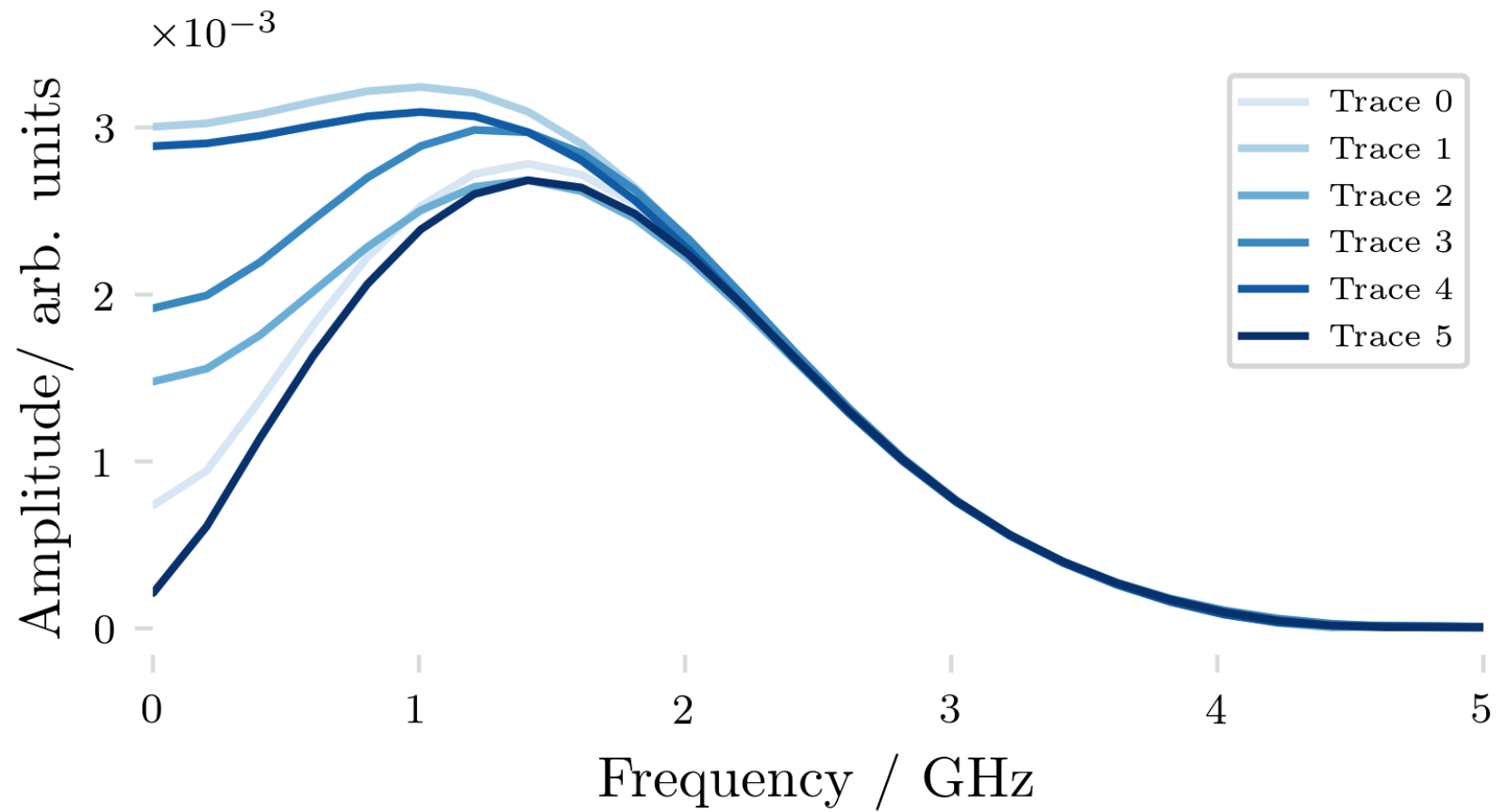
3e12 ppb



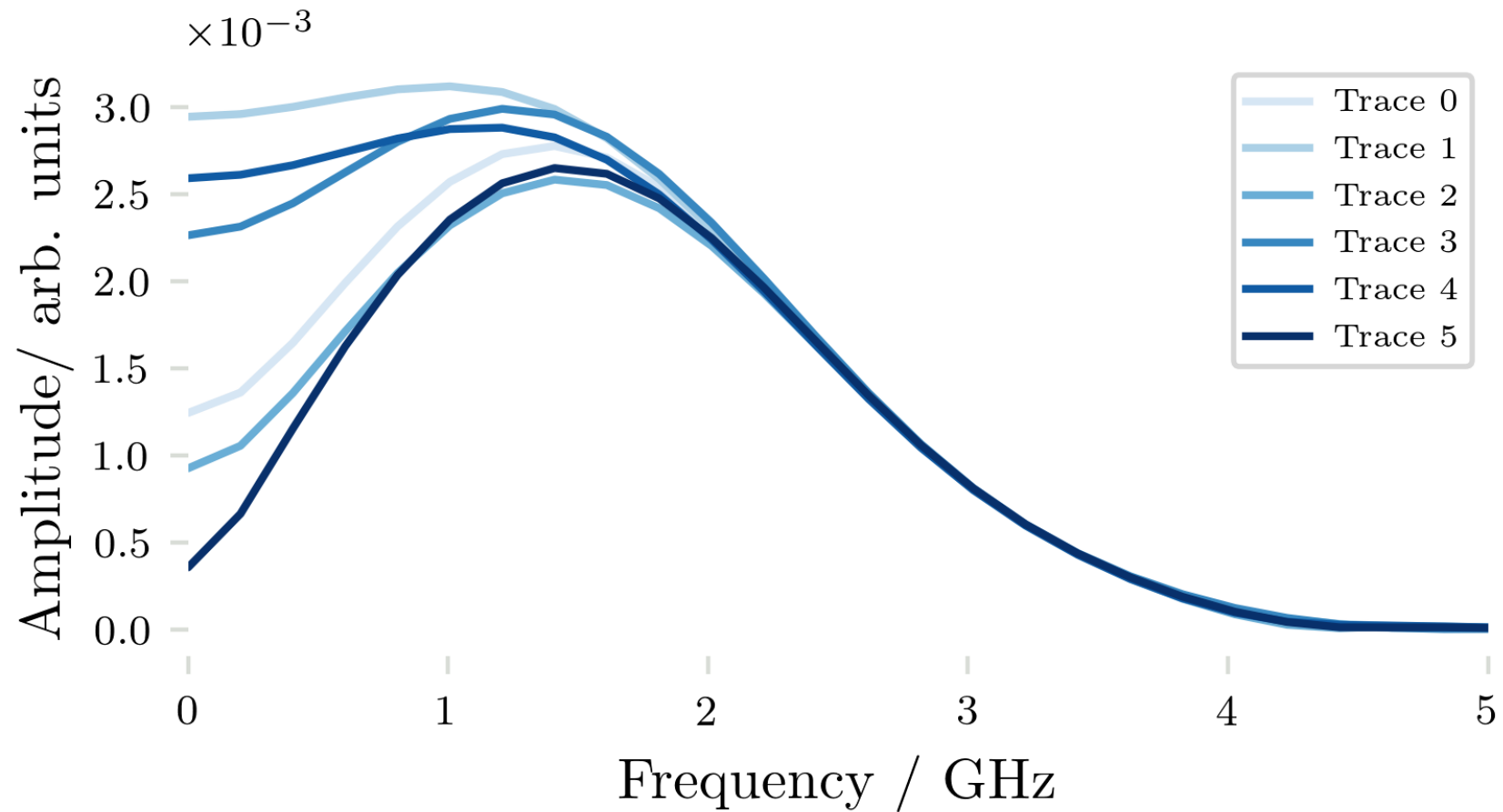
4e12 ppb



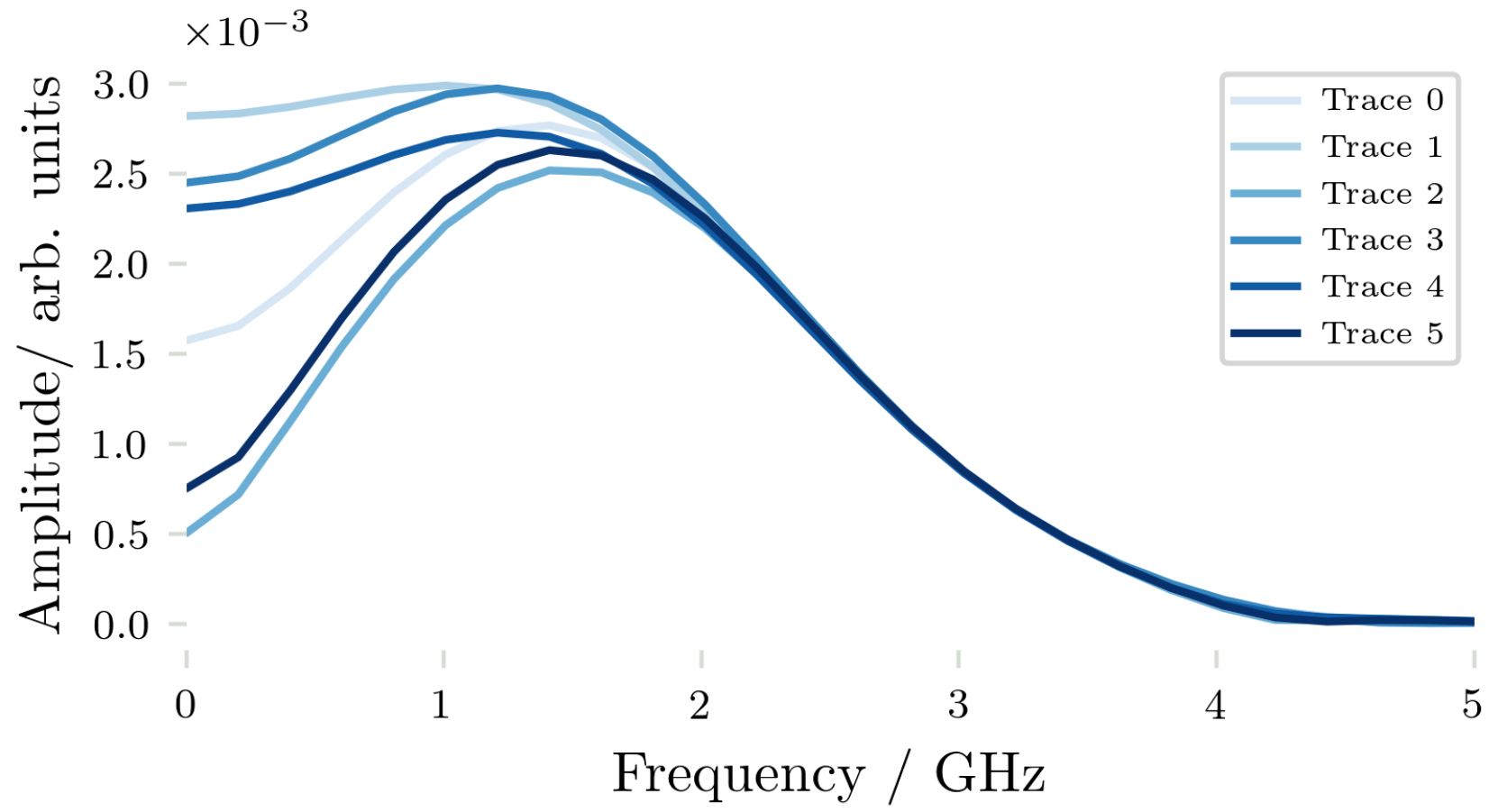
5e12 ppb



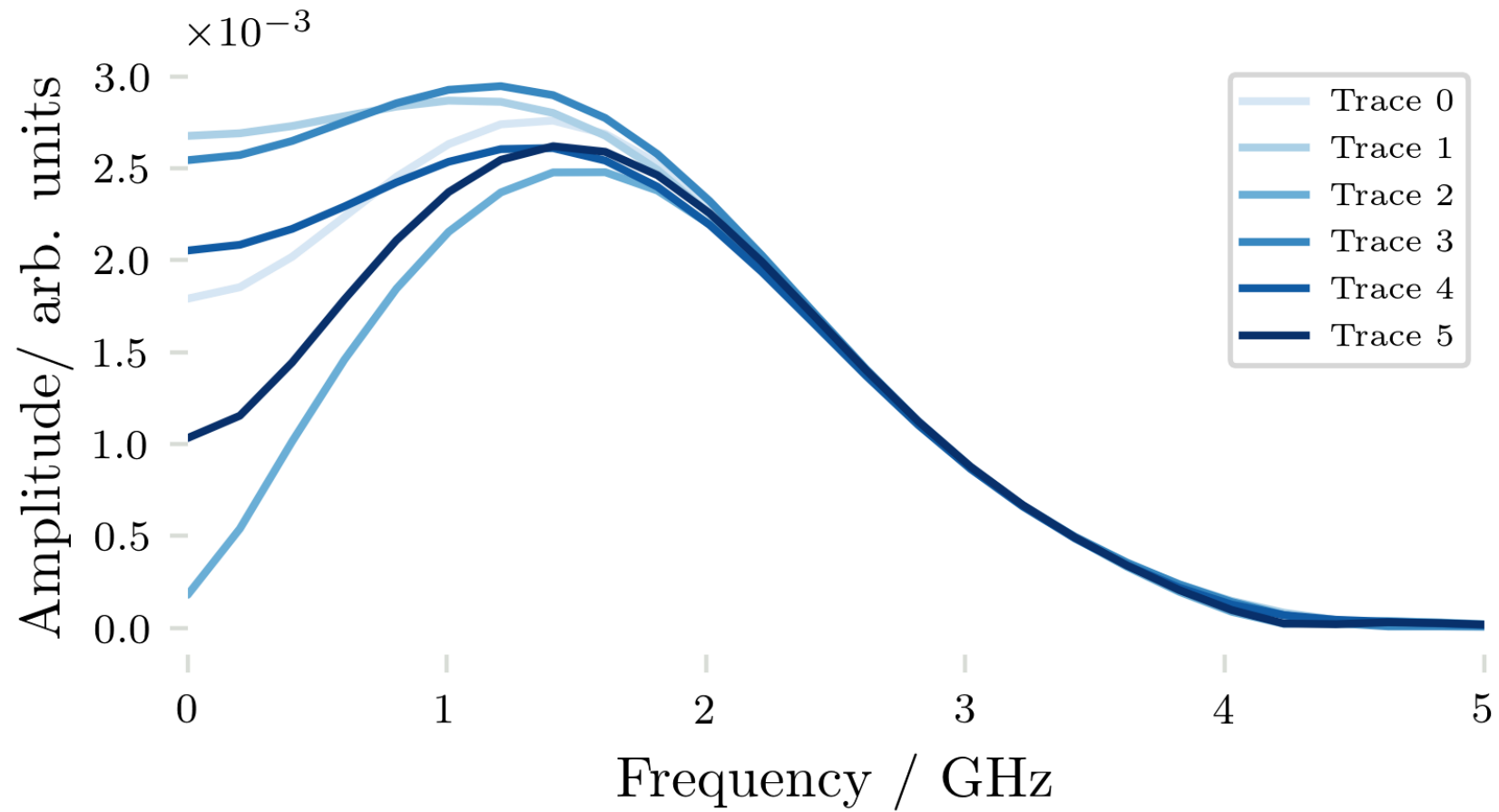
6e12 ppb



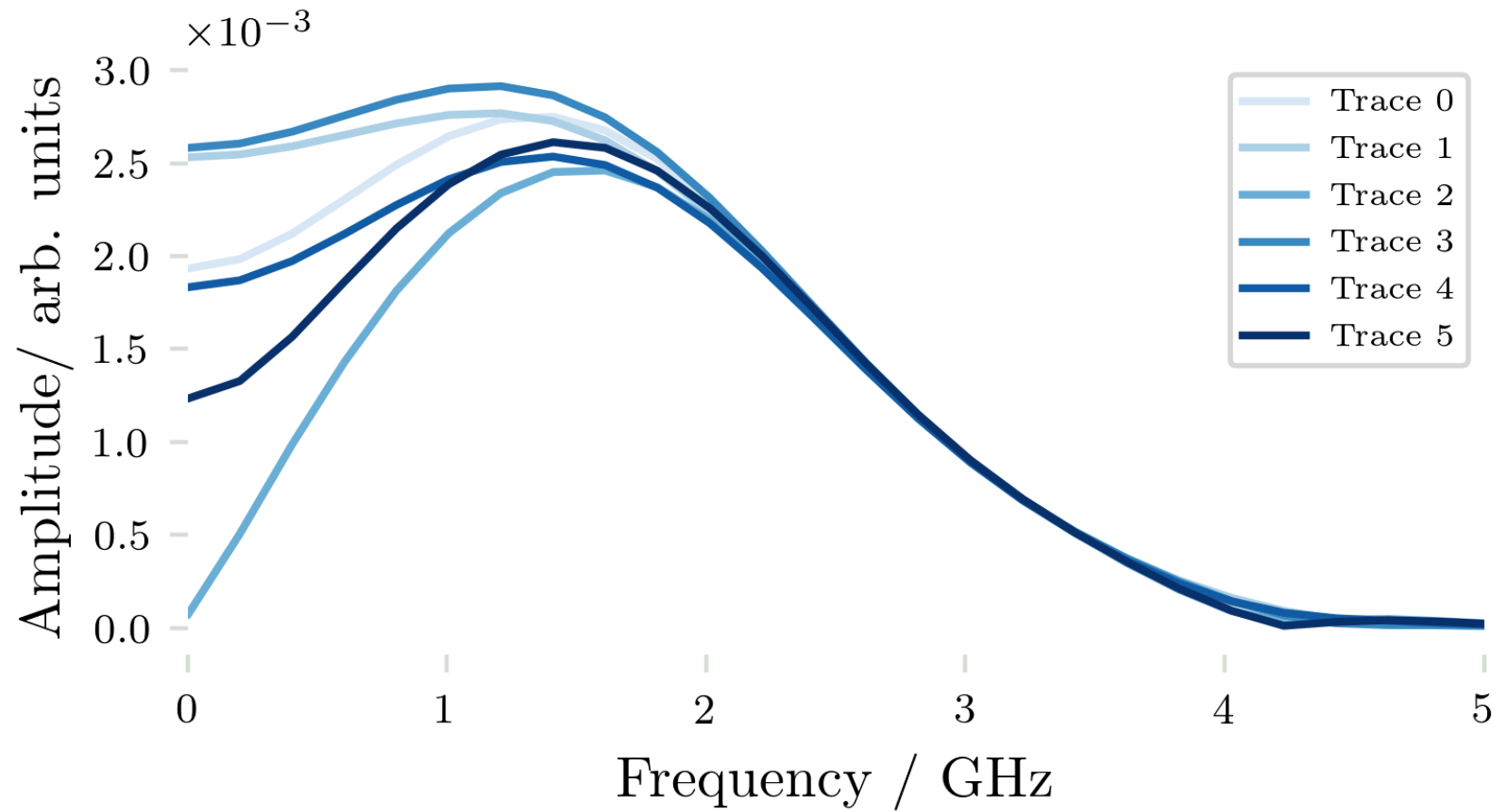
7e12 ppb



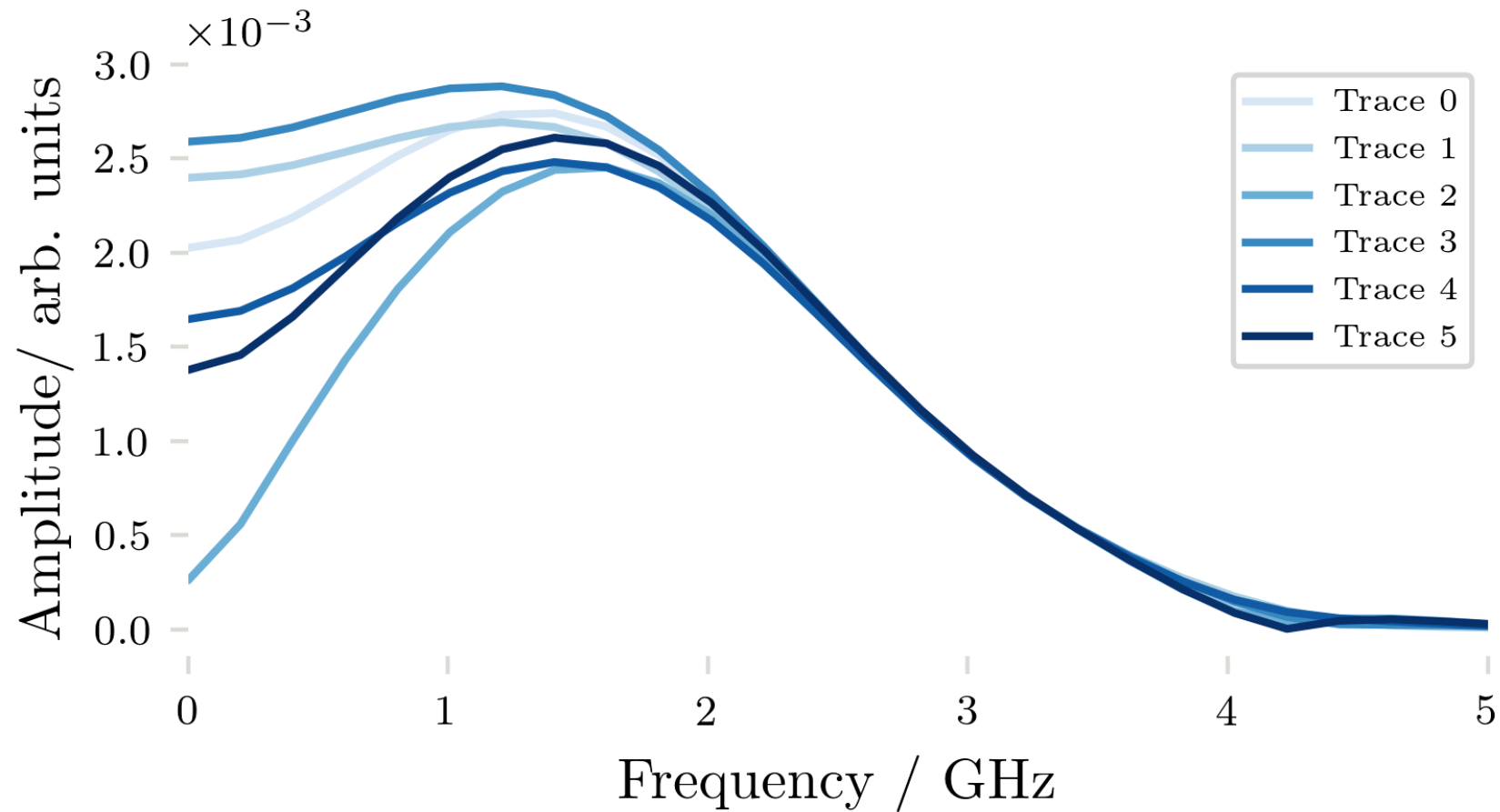
8e12 ppb



9e12 ppb



10e12 ppb



- Conclusion: intrabunch motion frequency increases with intensity