Construction and Characterization of a Table-Top Mode-Stirred Chamber

Plate, S.; Krauthäuser, H. G.; Nitsch, J.

Institute for Fundamental Electrical Engineering
and Electromagnetic Compatibility

Otto-von-Guericke-University Magdeburg

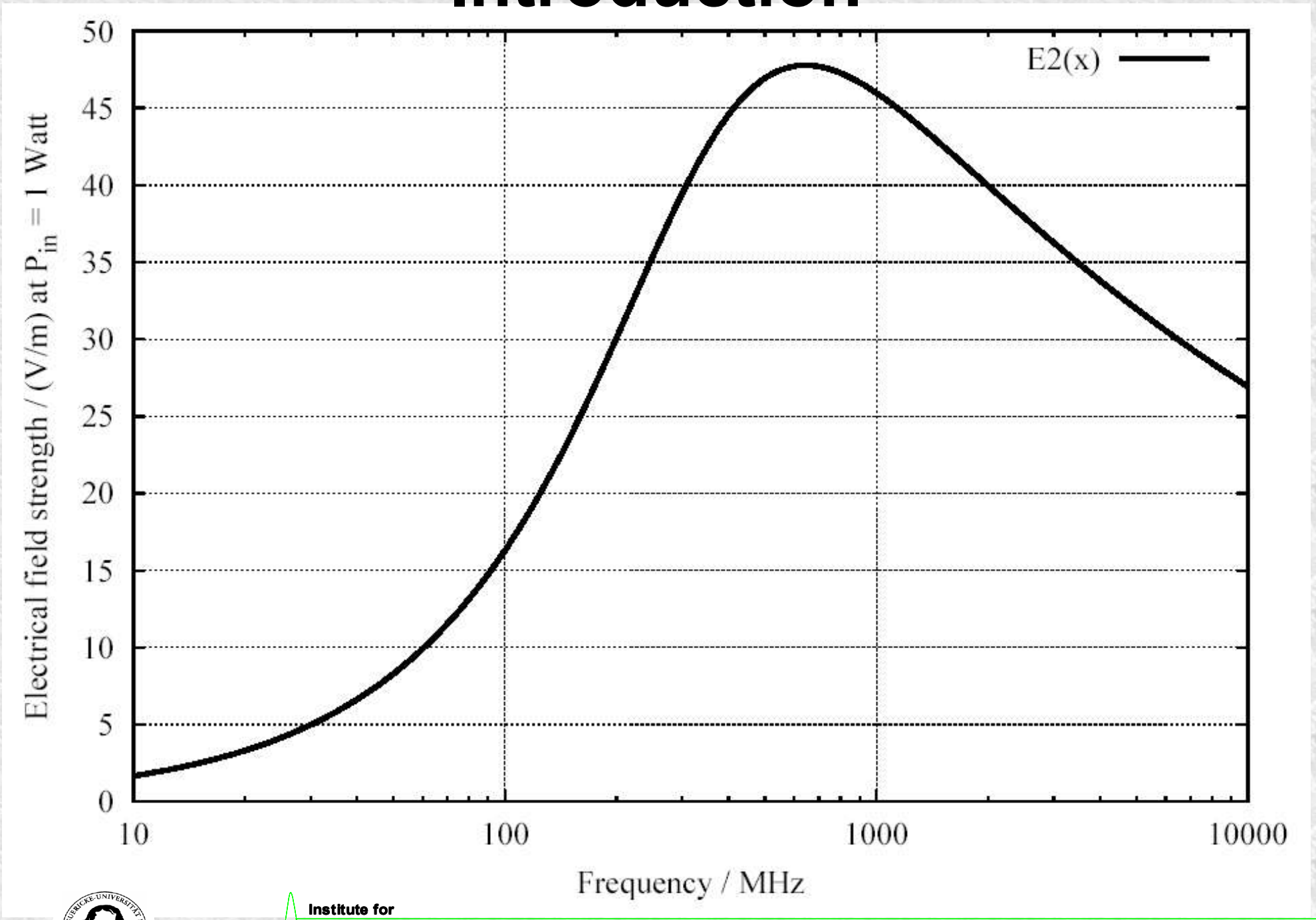
Contents

- introduction
- construction
- characterization
- summary

Introduction

- large MSC:
  - 7.8m x 6.4m x 3.4m
  - f_s=200 MHz
  - one stirrer
- drawback:
  - field strength decreases above 1 GHz
  - common feature of MSCs

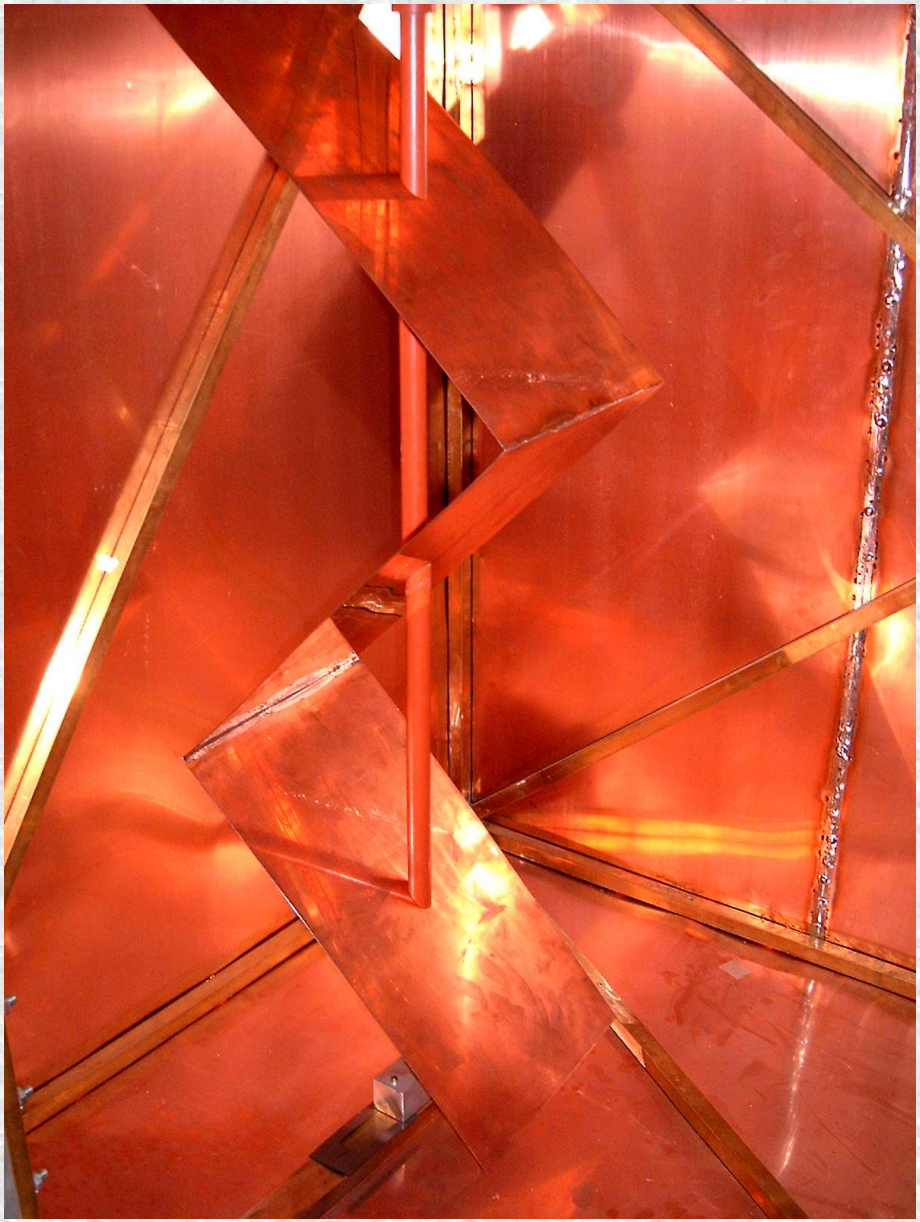
Introduction



Construction - Chamber

- dimensions:
  - width: 1.5 m
  - height: 1.2 m
  - depth: 0.9 m
  - surface: 8.45 m^2
  - volume: 1.62 m^3
- 1mm copper plates

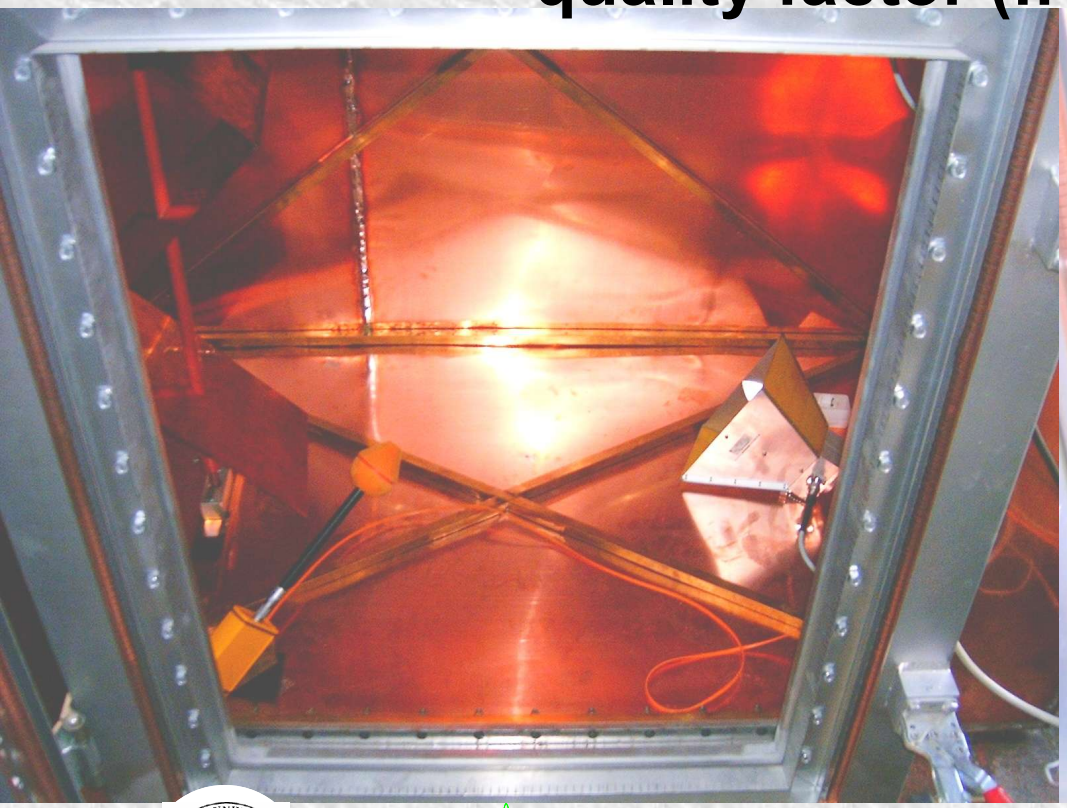
Construction - Stirrer



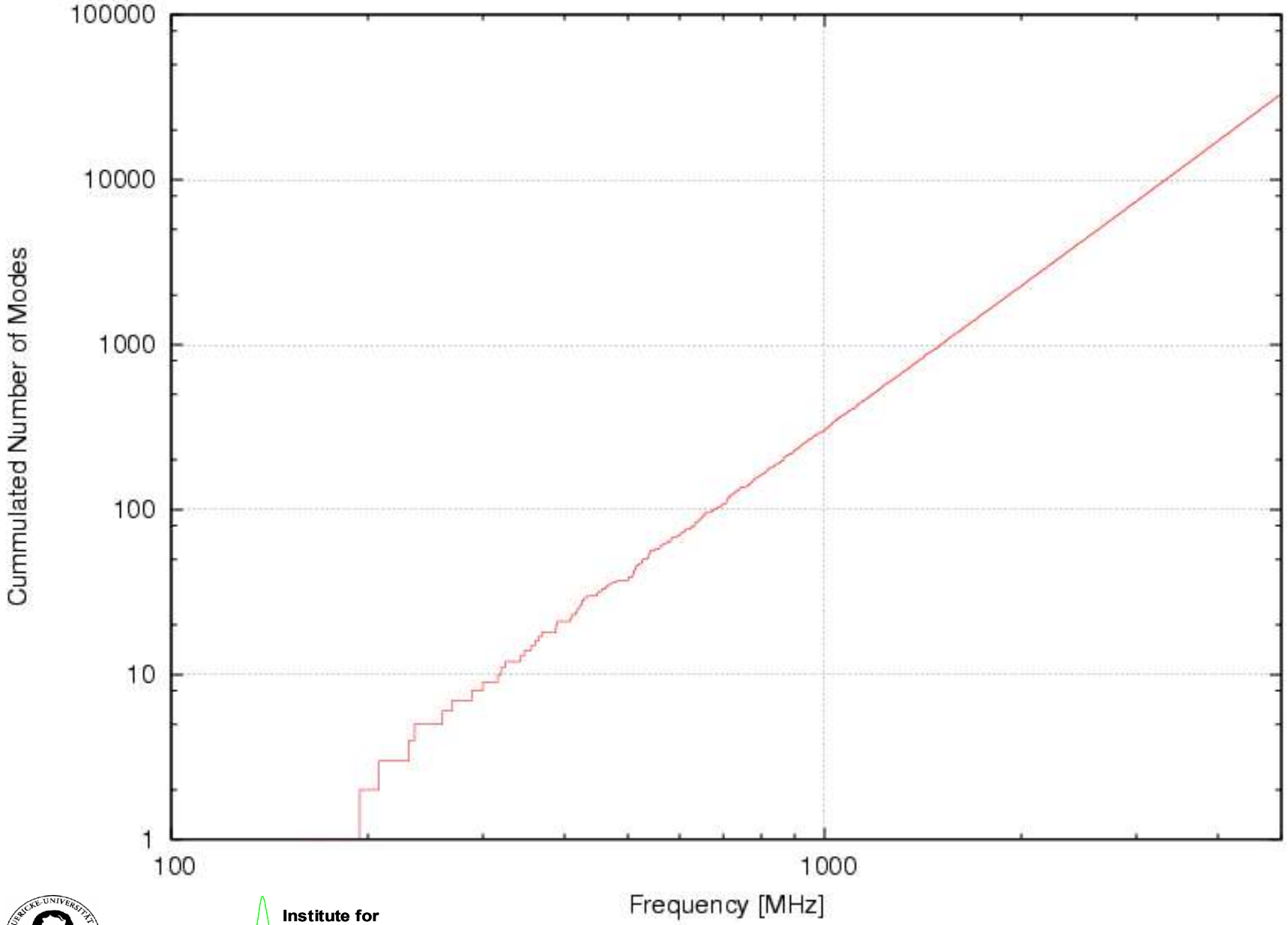
- dimensions:
  - width: 0.25 m
- 1mm copper plates

Characterization

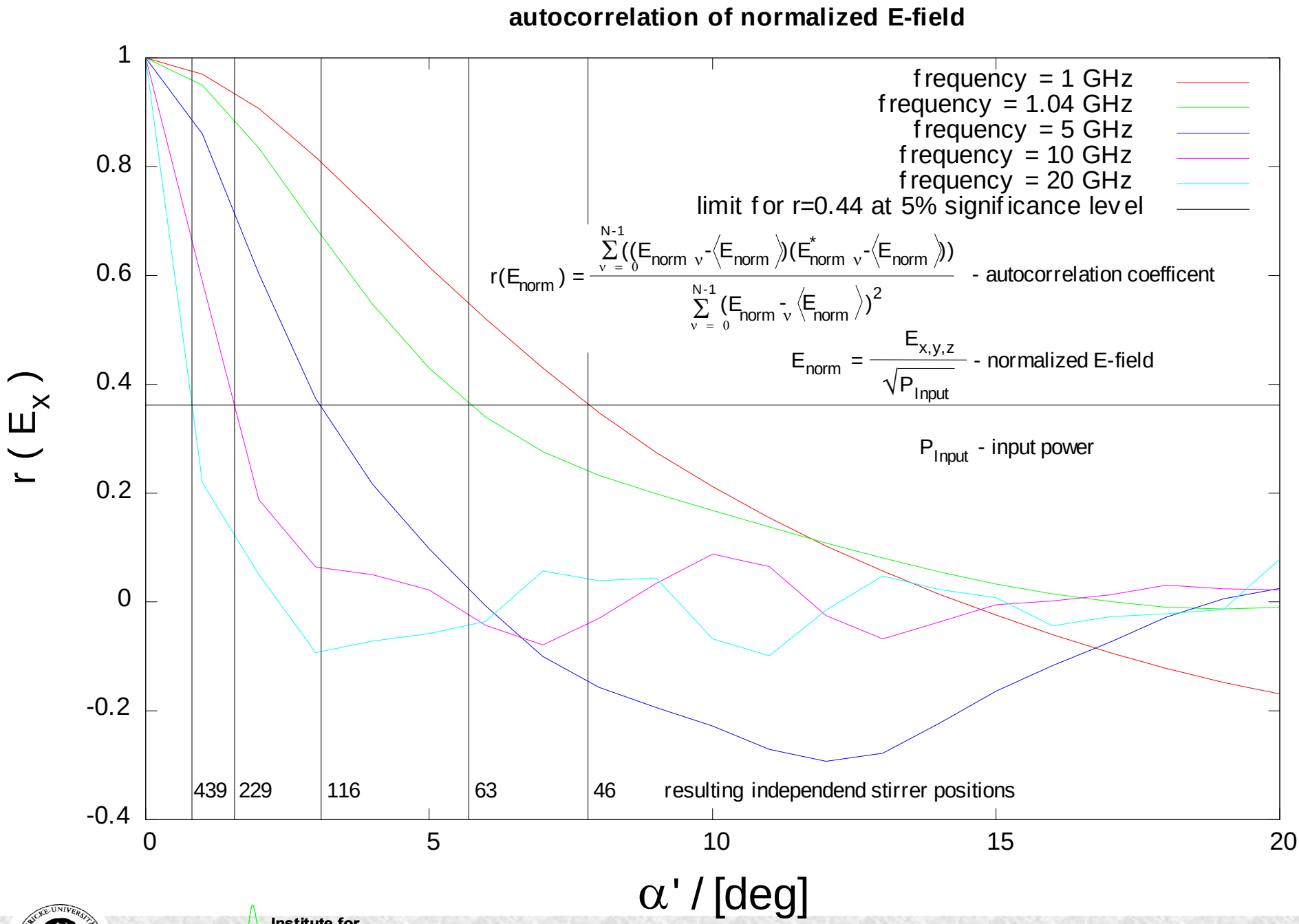
- based on IEC 61000-4-21
- Lowest Usable Frequency: 1 GHz
- autocorrelation -> No. of independent tuner positions
- calibration -> normalized E-Field, standard deviation
  -> quality factor (from time domain and from ACF)



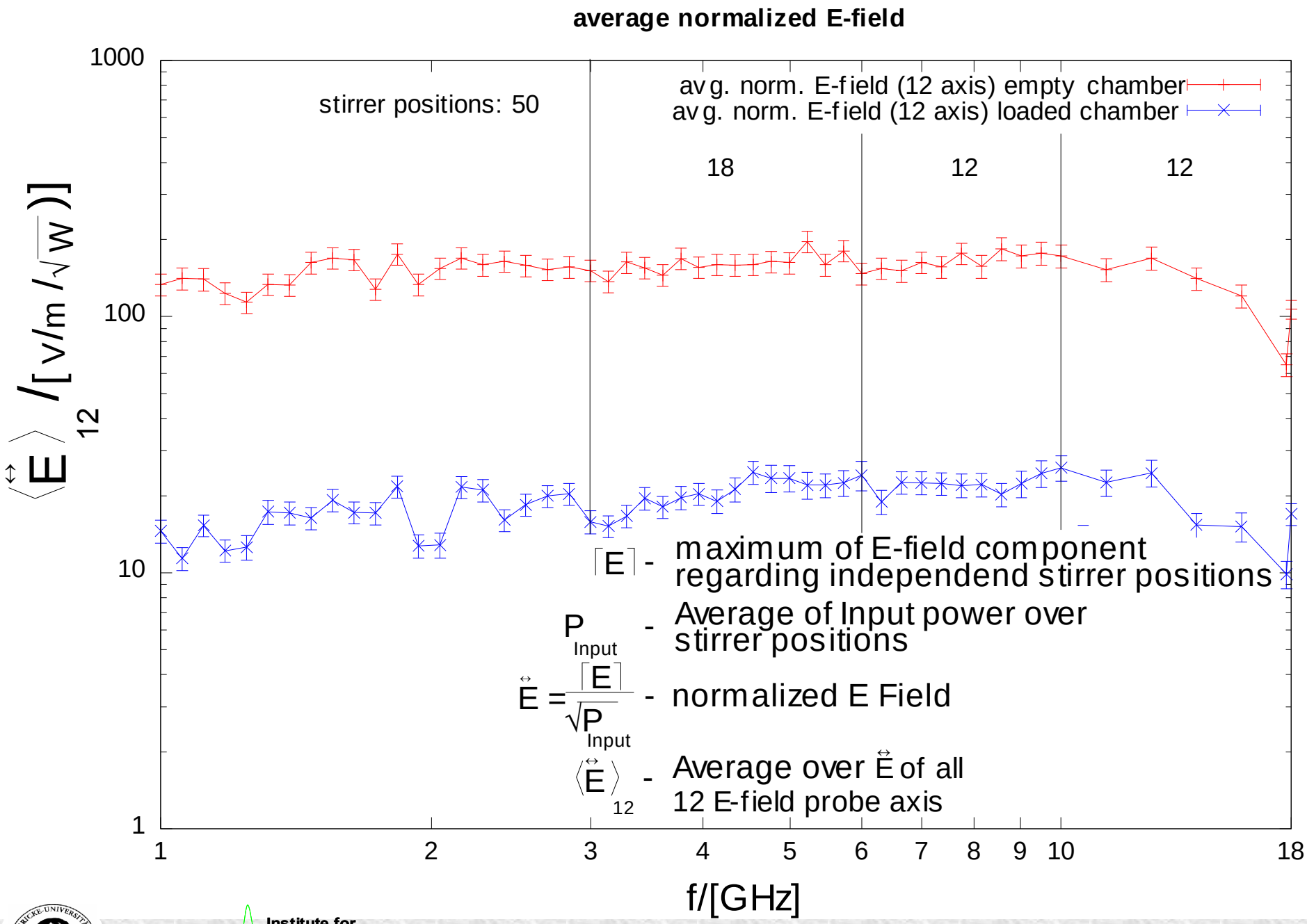
Number of Modes



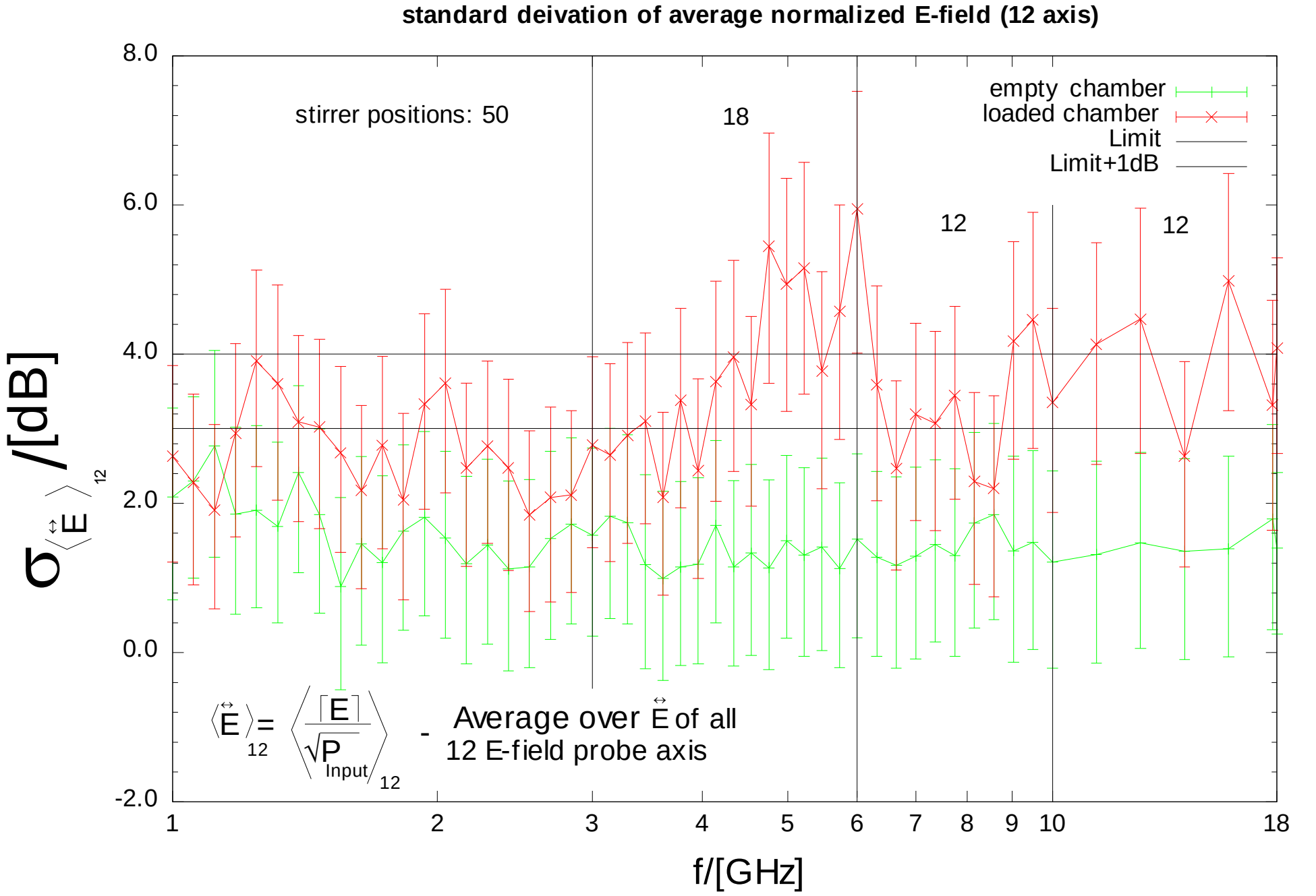
Independent Stirrer Positions



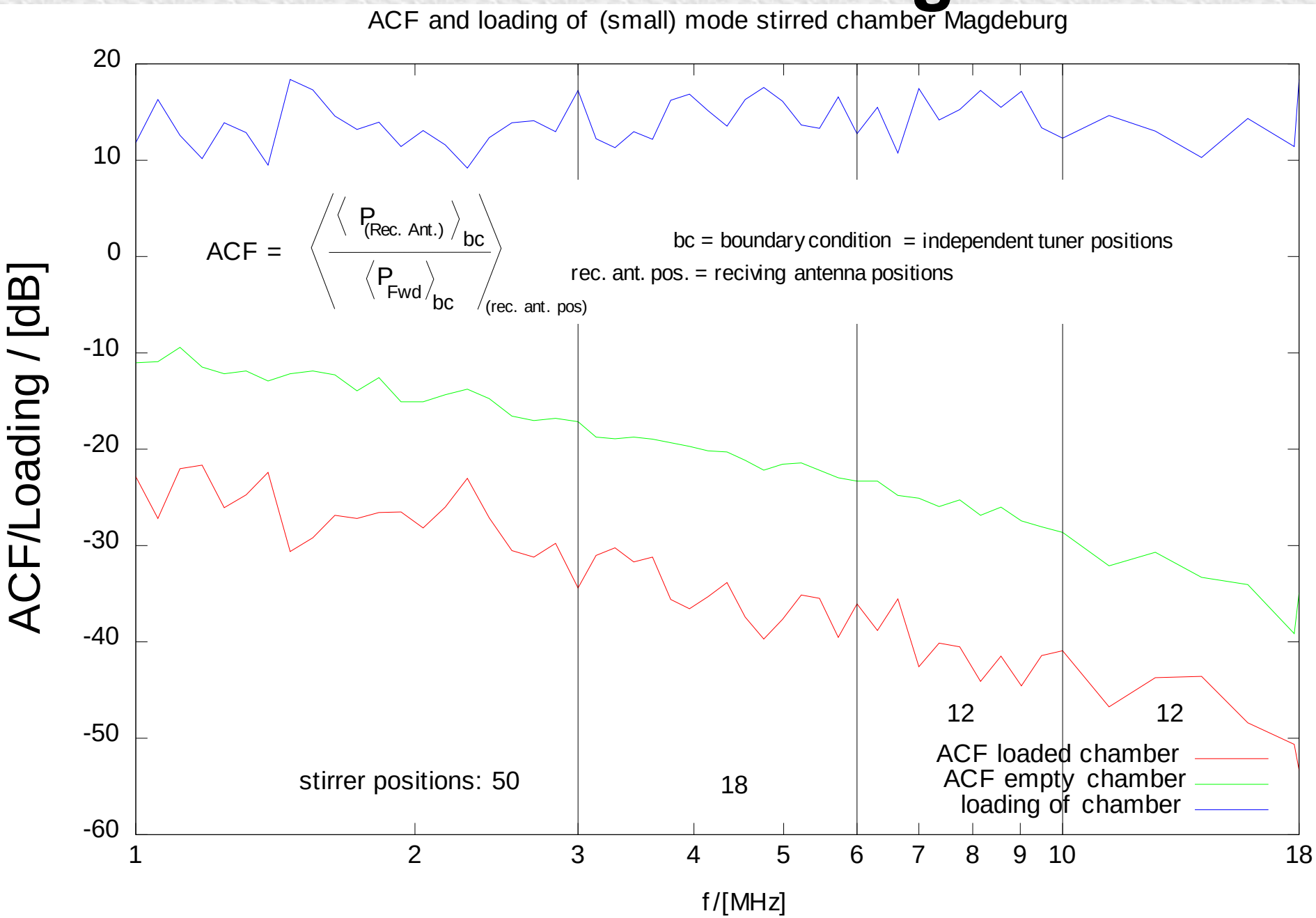
Averaged Normalized E-Field



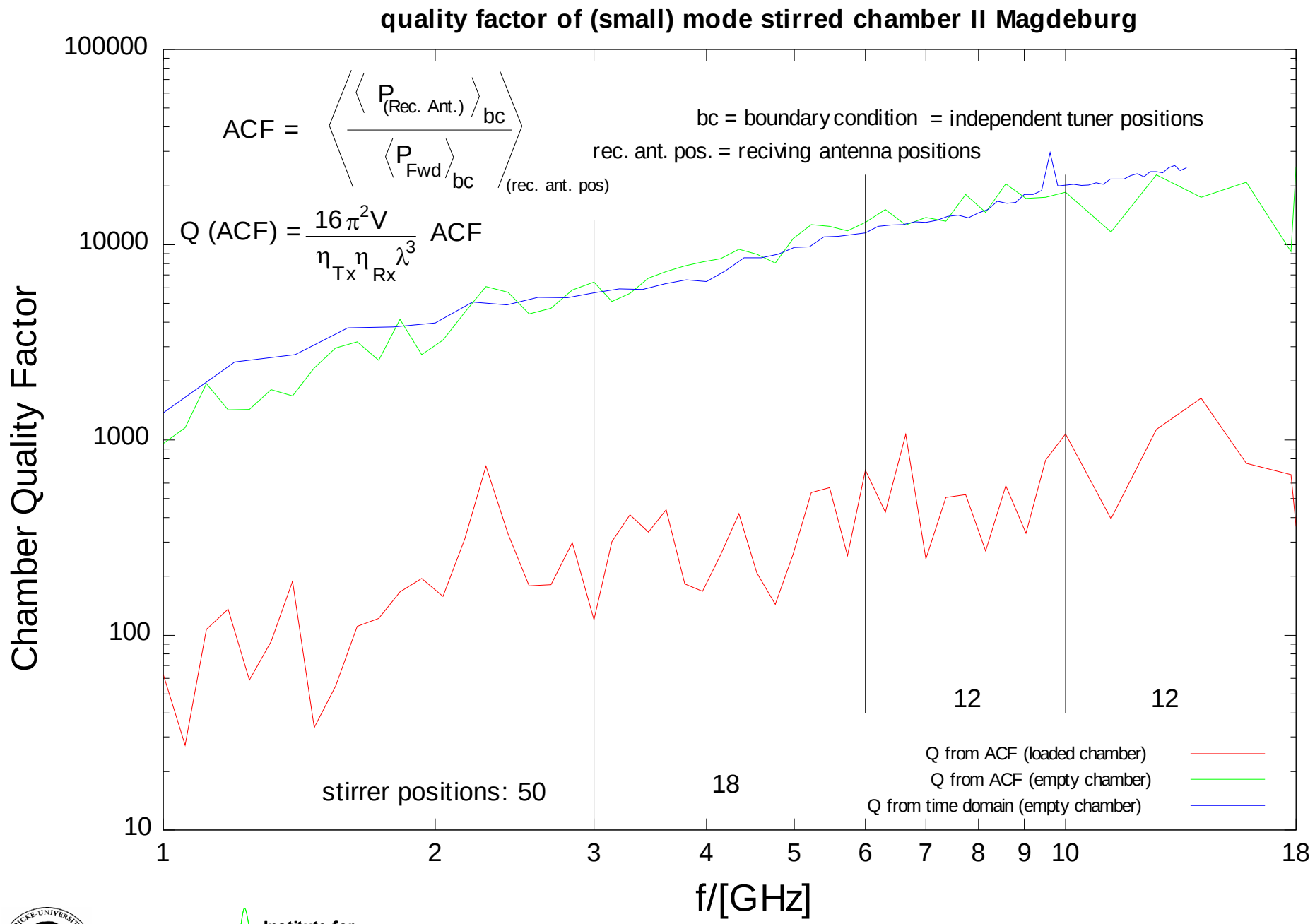
standard deviation



ACF and Loading



Quality Factor



Summary

- achieved goals:
  - 1000V/m per 100W at above 1GHz
  - simple construction