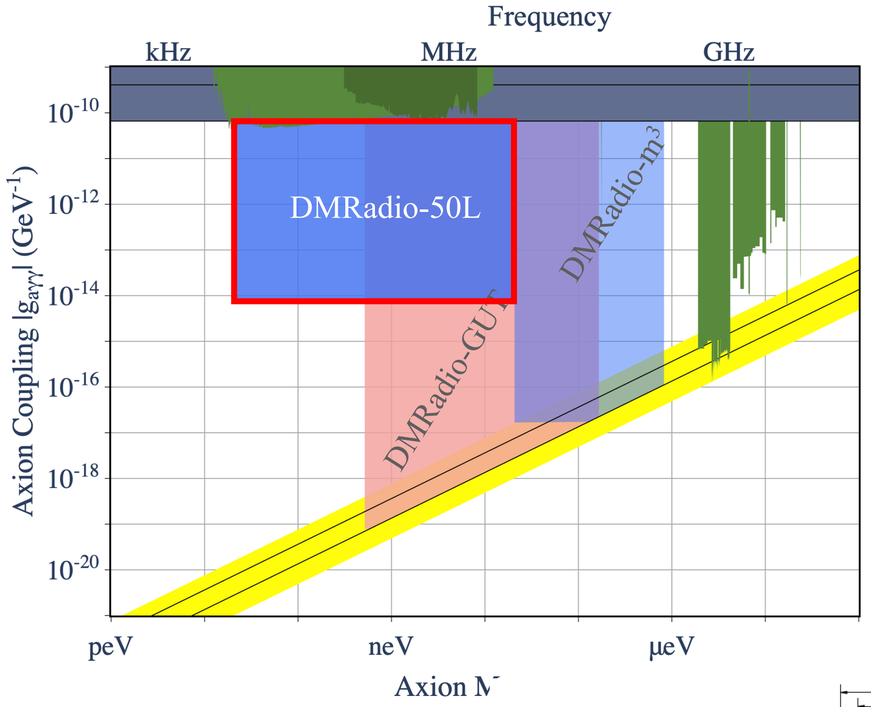
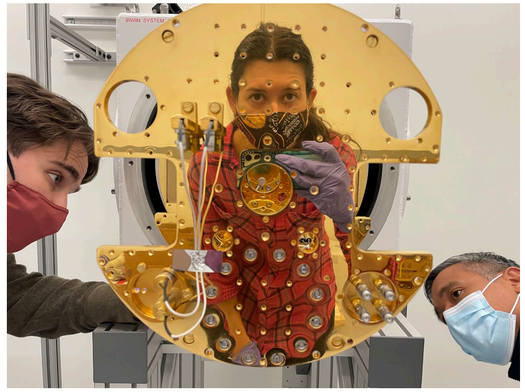
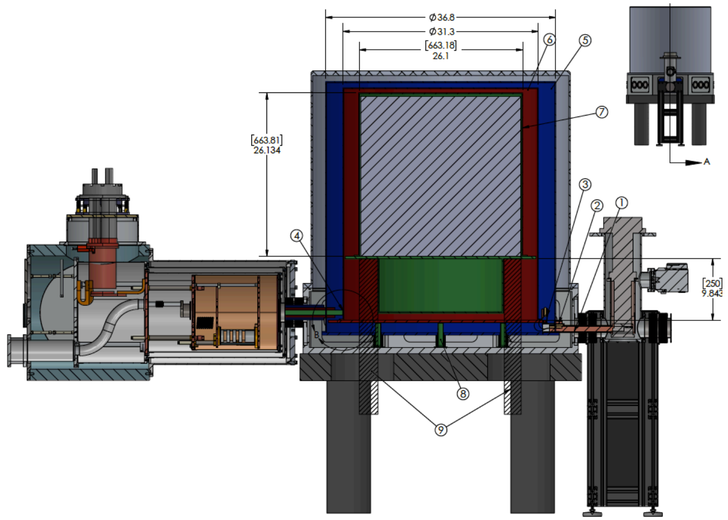
Dark Matter Radio – 50 Liter, Poster #13
Kent Irwin for the DMRadio collaboration



- The Dark Matter Radio is a suite of experiments searching for axion dark matter at mass below 1 μeV.
- Maria Simanovskaia will present our flagship experiment, DMRadio Meter Cubed, in Talk #36 on Thursday.
- In this poster, I present the status of DMRadio 50 Liter which probes much lower frequencies (below 5 MHz).
- DMRadio-50L serves as a testbed for the development of quantum sensors for axion searches, and a pathfinder for a GUT-scale axion search in the next decade.





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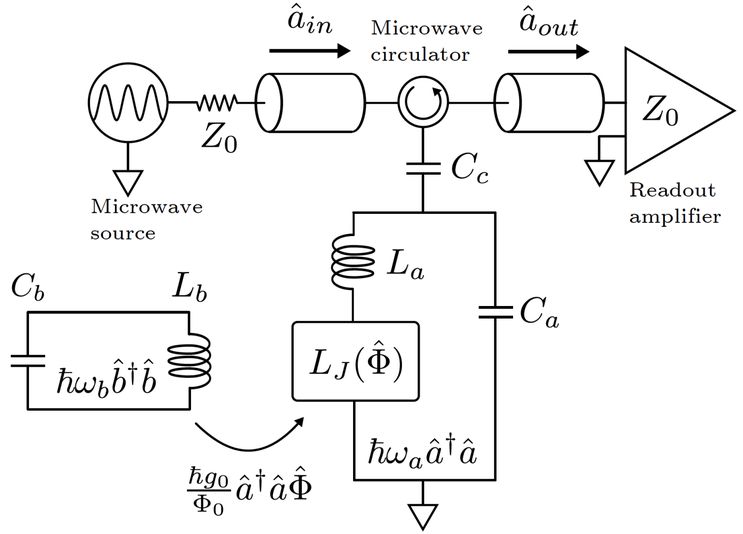
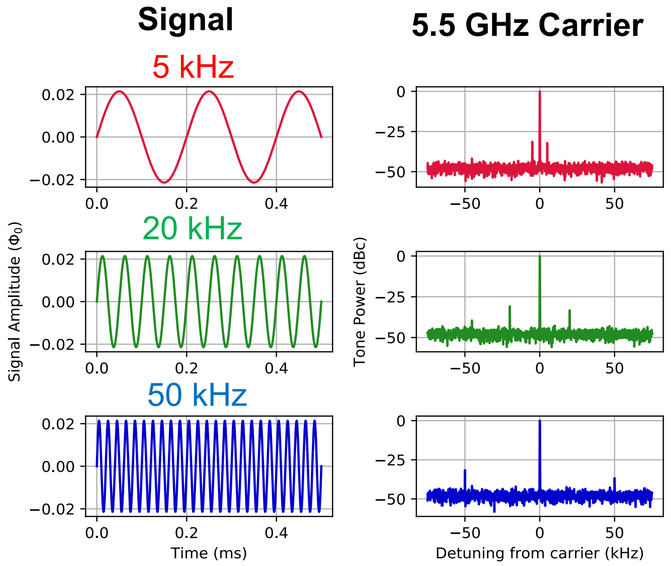
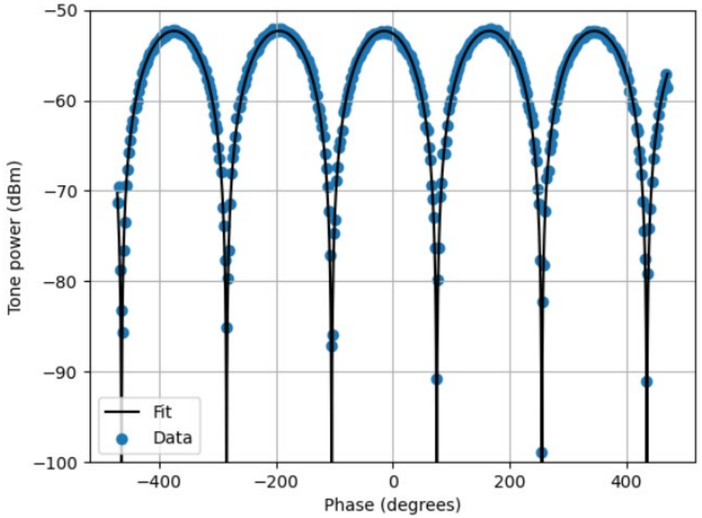
Quantum Sensors for sub-μeV axions: RF Quantum Upconverters



- In this frequency regime, dc SQUIDs operate at ~20x the Standard Quantum Limit (SQL).
- DM Radio-50L is a development platform for RF quantum upconverters, which operate by converting low-frequency signals to 5.5 GHz.
- RF Quantum Upconverters have the potential to perform better than the SQL through backaction evasion techniques.
- *We will never achieve the goals of DMRadio-GUT without substantial quantum acceleration beyond the SQL.*





EXTINCTION RATIO: -46.9 dB