Contribution ID: **6** Type: **not specified**

The Microstrip SQUID Amplifier in ADMX

Tuesday, 21 August 2018 16:00 (30 minutes)

A critical enabling technology for ADMX is the low-noise microwave amplifier. The amplifiers used in ADMX are about 10 times lower noise than the best available commercial amplifiers, enabling ADMX to cover ground in months that would otherwise take decades. One kind of amplifier used in ADMX is the Microstrip SQUID Amplifier (MSA). The MSA was inspired by the unique challenges of ADMX, with the first working MSA demonstrated in 1998, and an MSA powering the first DFSZ-sensitive Axion search results published in 2018. I will present an overview of the MSA, including a review of the basic operating principles, design principles, challenges presented by the ADMX project, practical implementation, and performance of devices used in operation in ADMX.

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