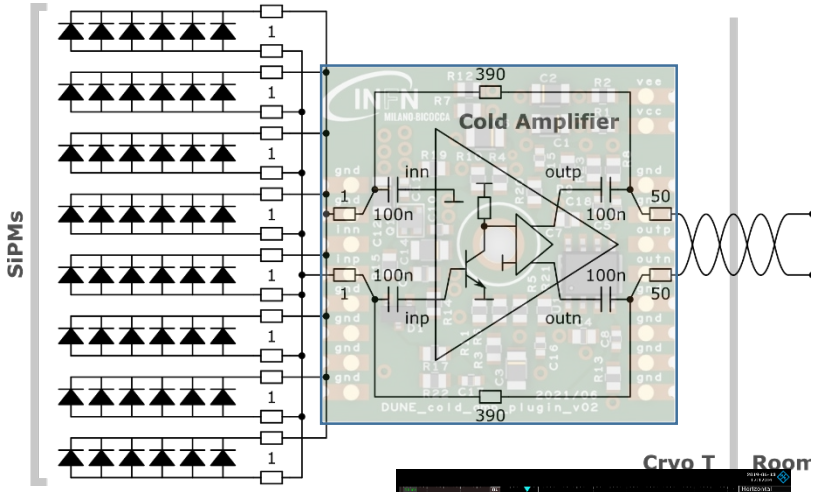
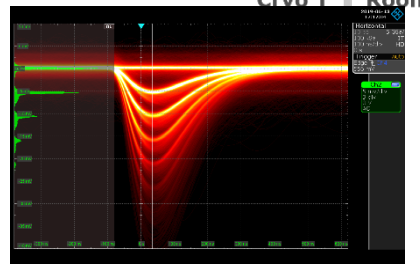
A 0.22 nV/√Hz, 4.5 mW/channel cryogenic amplifier for large arrays of SiPMs in liquid Argon

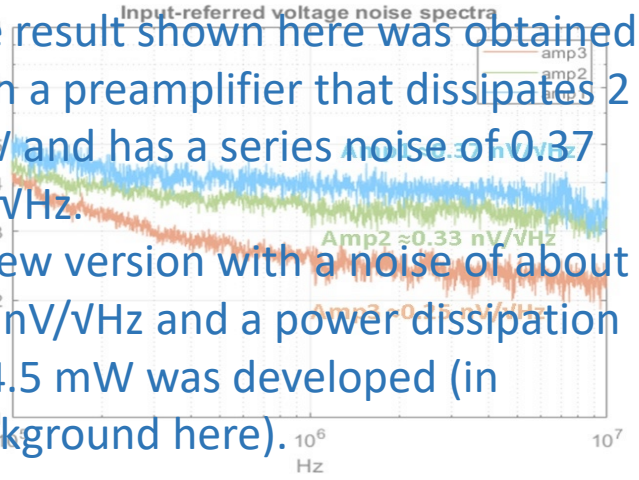
P.Carniti, A.Falcone, C.Gotti, G.Pessina, F.Terranova
INFN Sezione di Milano-Bicocca e Università di Milano Bicocca

This amplifier is designed to operate at LN or Lar for reading large area SiPM arrays, hundreds of nF.
It is a hybrid solution with a SiGe HBT as input and a fully differential Bi-CMOS amplifier as second stage.

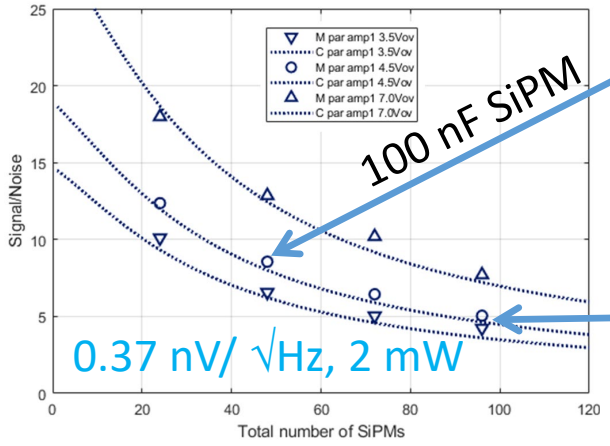


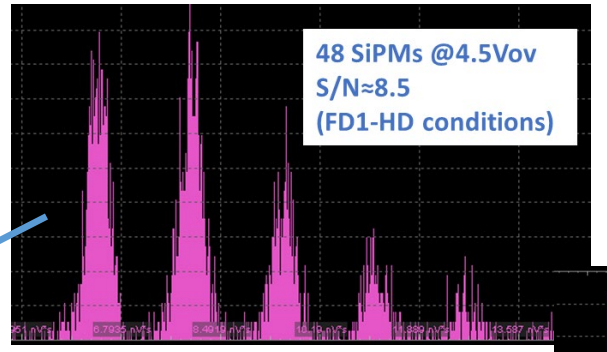


The result shown here was obtained with a preamplifier that dissipates 2 mW and has a series noise of 0.37 nV/√Hz.
A new version with a noise of about 0.2 nV/√Hz and a power dissipation of 4.5 mW was developed (in background here).



Expected (dashed) and measured S/N





100 nF SiPM

200 nF SiPM