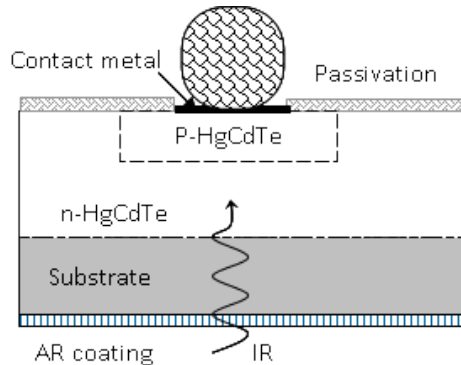


- In 2012 and R&T funded by CNES and CEA to realize and characterize HgCdTe detectors for ECHO.

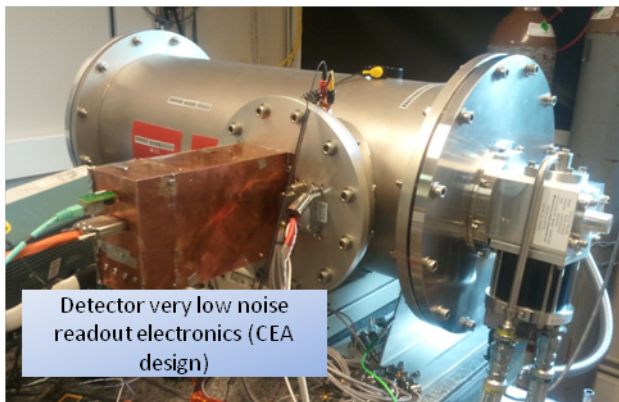
- CEA/LETI (Grenoble):



- Realized MCT p/n
- Hybridation to an **existing** ROIC readout circuit
(Not optimized)
- Test at 77k

- CEA/IRFU (Saclay):

- Test bench
- Characterization of detectors from 80k to 30k



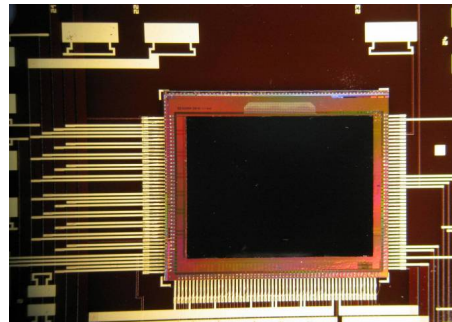
Detector very low noise readout electronics (CEA design)

LWIR HgCdTe CEA/LETI

- **Main features**

- Format: 320x240
- Pixel size: 30 μ m
- Roic: CTIA (existing at LETI; to be optimized later)
- Well depth : 2 channels : 100fF=1.12x1E6 / 500fF=5.6x1E6
- Readout noise : 100fF(150 e-) 500fF(700 e-) (not optimized)

Note: several different technological variants explored



Alternative HgCdTe CEA/LETI 3/3

Some promising results so far at 40k

Detecteur	12-03	12-17
Technology	Variant	Historique
λ_c	10.4 μm	11.2 μm
Dark Current	40 e/s	11600 e/s
Opérabilité ⁽¹⁾	40%	N/A
RQE (78K)	70%	70%
RQE(40K)	Drop with temperature	70%

(1) Pixel with dark current < 500 e/s

Future developments

- **Next steps to develop HgCdTe detectors for ECHO**
 - **A new run funded by CNES and CEA;**
 - **Detector available end of the year**
- **Several additional runs needed to optimize detectors. Dedicated ROIC also needed.**