

HERD General Progress

20210222

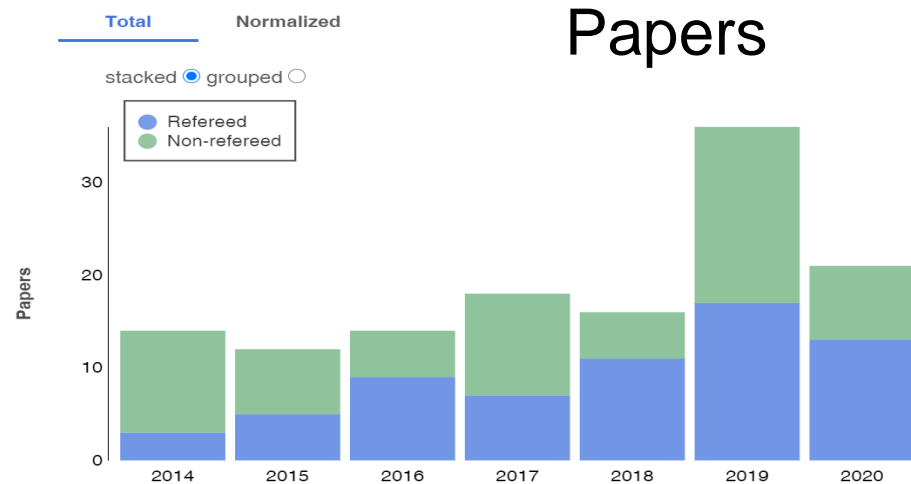


HERD impacts

Papers

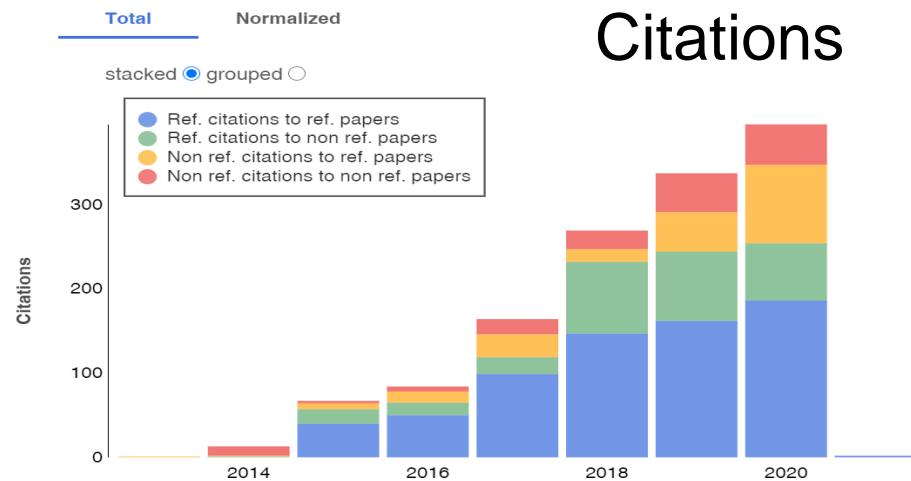
		Totals	Refereed
Number of papers	?	131	65
Normalized paper count	?	51.3	19.7

Data from NASA ADS



Citations

		Totals	Refereed
Number of citing papers	?	1077	744
Total citations	?	1332	890
Number of self-citations	?	110	65
Average citations	?	10.2	13.7
Median citations	?	1	6
Normalized citations	?	351.0	283.3
Refereed citations	?	974	686
Average refereed citations	?	7.4	10.6
Median refereed citations	?	1	5
Normalized refereed citations	?	264.0	220.7



The HERD International collaboration

- Regular online international meetings since pandemic
 - HERD analysis meeting
 - HERD trigger meeting
 - HERD PSD meeting
 - HERD SCD meeting
 - HERD CALO meeting
 - HERD CALO SW meeting
 - HERD hardware meeting (including BT)
 - 80+ participants in the 1st meeting
- Collaborative efforts are leading to substantial progress
 - Example 1: Joint trigger study provided detailed and quantitative data on acceptance and trigger rates
 - Example 2: Dual read-out for CALO becomes more feasible (both performances and engineering implementation)
 - Example 3: Finalization of the beam test application form
 - ...

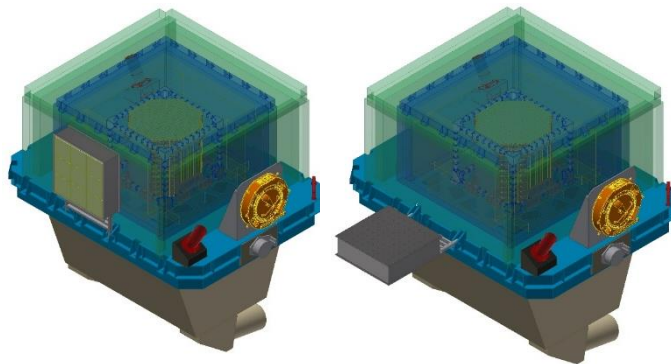
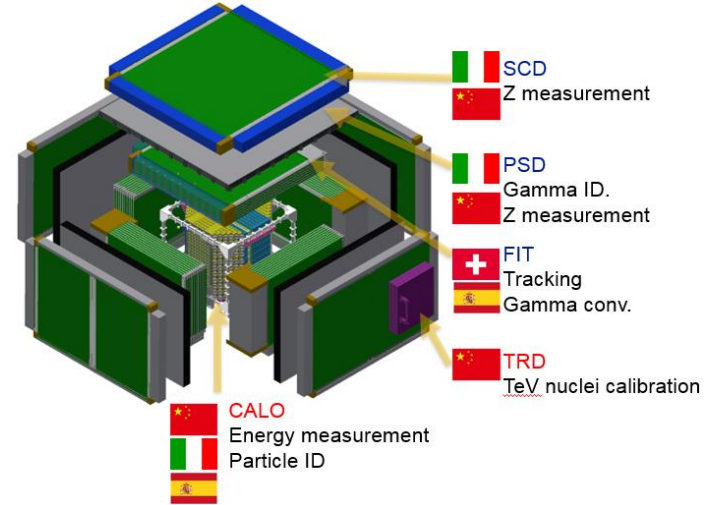
**180+ scientists
in HERD maillist**

Funding application in China

- Funding for key technology study and prototype development from NSFC was approved
- A funding guideline on the next generation of space high energy radiation detection was announced: no hardware, only “soft”-work. The HERD team in China will apply for it in 2021.
- Funding for HERD Phase-B study was applied, not yet approved.

General design of HERD

- Number of instruments changed from 4 to 5
 - Inner STK to outmost SCD
- Supporting module of HERD changed from China-Italy module back to Experimental I Module
- Automatic switch of TRD in between two working conditions



TRD
calibration

TRD
stand-alone



Discussion: weight reduction of HERD

- CSU has been pushing for the final approval and funding all the time.
- CMSA has been responding positively and directed CAST (the general contractor responsible for building the space station) to start the accommodation study of HERD on the space station.
- Recent feedback from CAST is that HERD is too heavy for the current external support structure of the space station, and complicated strengthening measures must be taken to safely install and operate HERD on the space station: possible **show-stopper** for HERD!
- Possible solutions to reduce HERD weight from 4 tons to 3 tons
 - Option 1: Complete scale down; reduce detector thickness or number of layers; weight reduction of supporting structures.
 - Option 2: Abandon LE γ -ray sciences, by removing PSD and FIT.
 - Option 3: Keep only top PSD and FIT: smaller LE γ -ray FOV.
- We can decide which option later, but must decide if we accept the 3-ton weight limit; if not, HERD may **NOT** go forward anytime soon.