Wrap-up

- There is a steep progress in PAF technology development, such as antenna elements, LNA design, cryostat design, data processing schemes and calibration
- PAF for radio astronomy are being developed for various bands, covering the frequency range from 70 MHz to 8 GHz
- The number of facilities considering PAF's is increasing. Most large single dish facilities have plans towards PAF's (Arecibo, Effelsberg, FAST, GBT, JBO, Parkes, SRT)
- PAF interferometers, such as APERTIF and ASKAP are currently being commissioned
- A steady improvement in PAF sensitivity is demonstrated, both for room temperature as well as cryo cooled systems
- Innovative capabilities enabled by PAF's are being explored: imperfect optics, solar towers. Similar to adaptive optics techniques, this can potentially (greatly) reduce capital costs of dishes or operate them beyond the design specs of the dish structure

Wrap-up (cont'd)

- PAF characterization and modeling is getting more thorough and accurate. More work is needed to bridge a typical 5-10 K gap between modeled and measured performance of PAF's in dishes
- Input is needed on science and science requirements (what is the killer-science of PAF's??)
- PAF standards and metrics need more thought
  - To formulate SMART system requirements
  - To compare competitiveness against other concepts, such as SPF and MFAA
- Various PAF beamforming backends are being developed independently, while their capabilities are similar. Collaborative development would be more efficient and save costs.

Wrap-up (cont’d)

- For competitiveness, capital and operational costs of PAF’s (including power consumption) needs to be reduced, in particular for PAF’s proposed to be built in significant quantities.
- More efficient, robust and/or flexible PAF processing and calibration schemes are being considered. Such as RFI mitigation, post-correlator beamforming. There has been limited progress on electronic and/or mechanical de-rotation. This would be very valuable.