ADC Breakout session

Agenda:

- ADC chips: existing and future:
    - Jonathan W presented on the risks of multi-core ADCs (see also his talk).
    - Added Pacific Microchip to ADC slide. They are working on a 56Gsps ADC using 64-interleaved ADCs (instead of the 320 cores in the current Fujitsu 56Gsps ADC). It is a CMOS hip.
    - Sampling vs analog bandwidth for the Fujitsu chip was raised as a concern (3dB point at 15GHz).
    - Offer made to visit Vadatech to test calibrated ADCs to show they do not have spurs.
    - Alphacore: samples due about Dec 2017. Analog BW 22-23GHz.
    - AD9208: 2.6GSps. JESD204B, 9GHz analog bandwidth

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- CASPER ADC Boards existing/under active development:
  - Respin older boar into FMC+.
  - Addantec ASNT7122 15GS/s FMC under dev (7120 on ZDOK @ 10GS/s exist, limited by the ZDOK). Finalised PCB, but not populated. SAO/NSF in collaboration iwth ASIAA.
  - 26Gs/s SAO FMC with Hittite ADCs.
  - Various FMC boards from IoA CAS (see talks). 5GS/s 12-bit is fastest. All FMC,
  - Vadatech: AMC590/591/594 (currently $65k, $80k, $88k). 594 can give 2x28GSps output.
  - Keysight: 16GSps, 12-bit.

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- ○ D-engine:
    - ■ There was a suggestion give that given the cost of high bandwidth ADCs, we want to break the ADC out from the main board ("break the conductive path"), which leads to a D-engine type implementation (good, but expensive).
    - ■ SNAP is meant as a D-engine type board. $3.5k, built in ADCs (3x HMCAD1511 + 1xZDOK).
    - ■ SAO is thinking of developing such a board, bringing them into better alignment with ALMA.
    - ■ QTT have a 4GS/s, 12-bits JESD204B chip, directly onto fiber.
    - ■ Other: see Sias talk about MeerKAT X-Band.

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- ADC testing:
    - There are companies that will try to improve calibration for you, but SAO noted that did not significantly improve on what they already do for the ADC-5G.
    - What tests are required for astronomy?
        - Agreed by consensus: we need to develop a document that describes the tests that we want to do and how to do them, and then get people to report the results for CASPER boards.

ADC Breakout session

Agenda:

- ○ Wishlist:
  - ■ A single core 8-bit 5GS/s ADC.
  - ■ SMA/ALMA: A 35GS/s 5bit ADC, 16-32Hz analog bandwidth. Single core.
  - ■ ngVLA: 200GSps [Keysight has 300GSps 8-bit, but power hungry and expensive]
  - ■ MeerKAT/SKA: 16Gs/s, 4- bits (MeerKAT can accept 15GS/s)
  - ■ Pulsars groups: 0.8-4.5GHz freq. Requires 8-12bit digitizers.