

# Possible change request for continuum cosmology

- Scientific considerations
  - Maximise survey speed, key is source density over wide areas for most applications
  - Ensure we are not confused (2-2.5arcsec is enough if morphological information is not required)
  - More to be gained with morphological information – separation of populations and weak lensing – 0.5arcsec probably enough for morphologies and weak lensing
  - For continuum we are frequency agnostic (mostly)

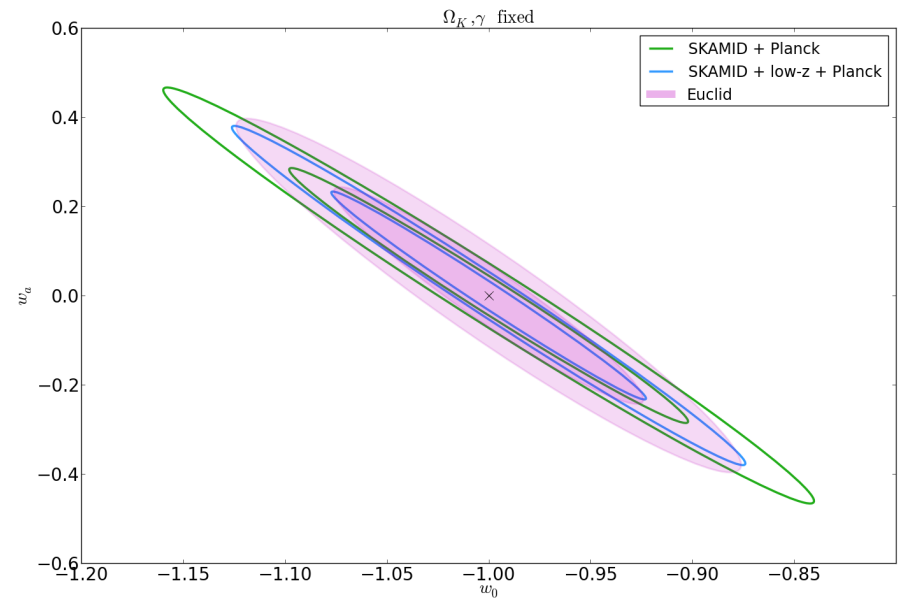
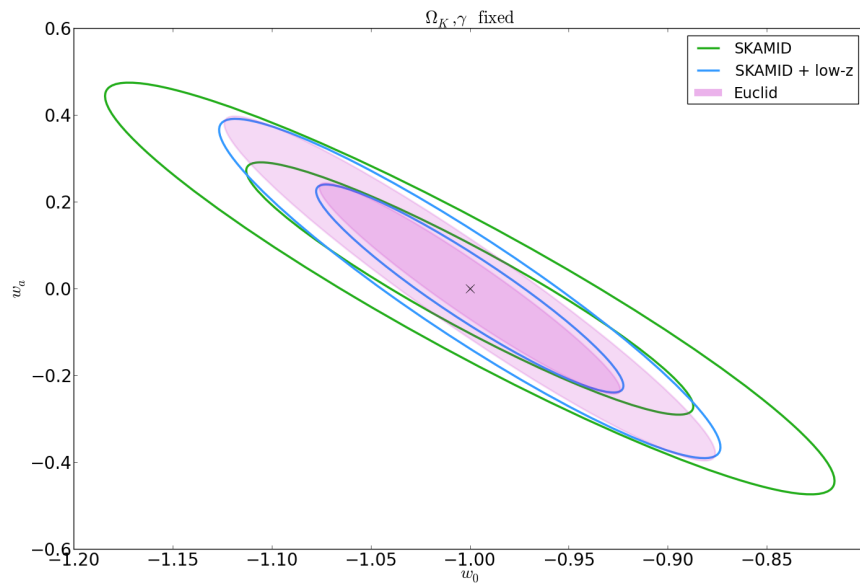
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- Changes to the baseline design
  - Battle between resolution and source density – need high resolution at low frequency!!
  - Sweet spot for SKA1 probably around 650-1100MHz given cost limitations. Can use BW to recover SNR.
  - Baselines need to be distributed to get maximum sensitivity on 0.5-2arcsec scales for morphology and detection efficiency

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- Changes to the baseline design
  - Very much the same as the requirement from continuum SWG as cosmology defined the continuum survey large areas
  - Probably have to take the longest baseline as is (or shorter), define frequency range for the survey that gives maximum SNR for cosmology for WL.
  - Populate 0.5-2" baselines at the given frequency to maximise SNR for WL and all-sky continuum survey

# Possible request for change: HI intensity mapping



- ▶ HI Intensity mapping provides the best constraints on dark energy with SKA1 at the moment...

# Possible request for change: HI intensity mapping

**Add single dish as an extra observation mode!**

Frequency band: from 350-1050 MHz ( $0.23 < z < 3$ ) to 350-1400 MHz ( $0.014 < z < 3$ ) – RFI issues? (reducing bandwidth will require more integration time and may affect foreground cleaning)

Make sure we have the calibration accuracy to reduce polarization leakage

Consider drift scanning for the full sky surveys? (stability of the pointings)

For the interferometer survey:

“only” need 20m to 70m baselines...

Can we make a few clusters of  $\sim 10$  dishes packed together within the core?

Dish size (not a request):