

Dave's 21cm Five Magic Numbers

Dave McGinnis

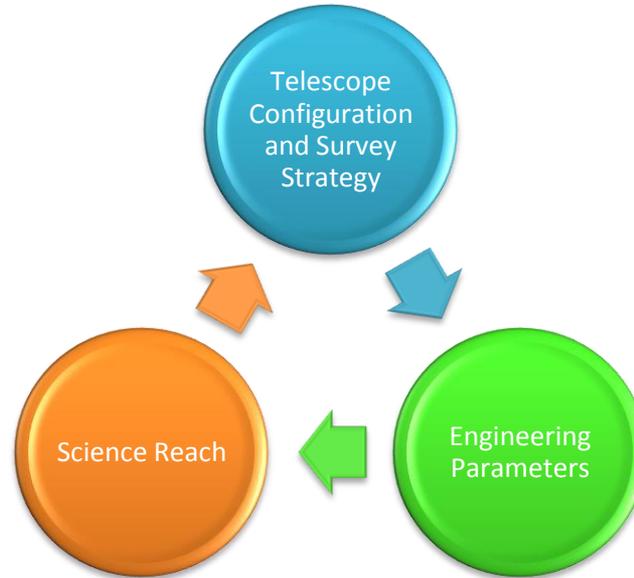
May 8, 2009

Motivation

- I am having a difficult time determining a self-consistent set of specifications for the CRT
- We need engineering parameters derived from the science requirements that are independent of the telescope configuration
- Derive the telescope configuration and survey strategy from the engineering parameters

Process

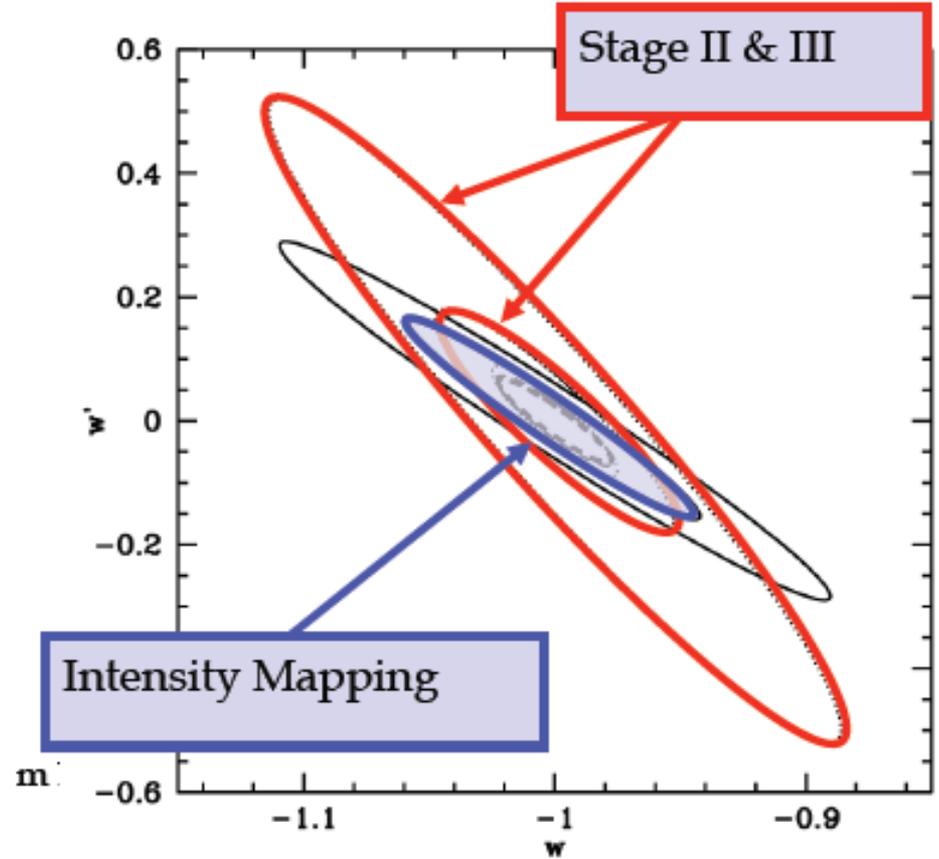
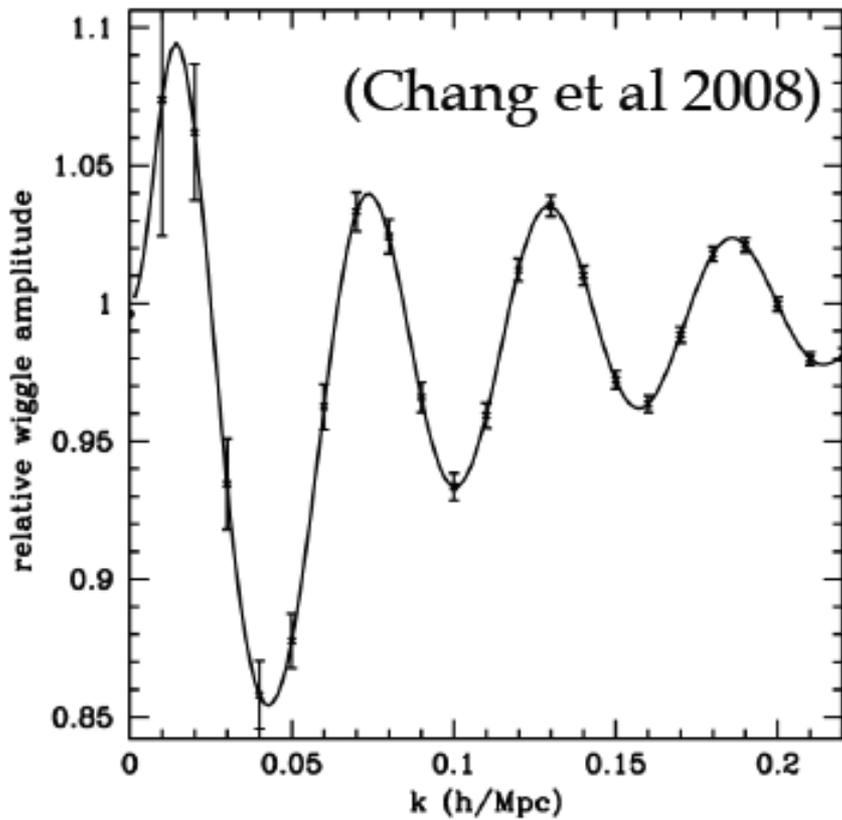
Currently, we are stuck in an infinite loop



I would like to do this:



Science Requirements



Engineering Requirements (a.k.a The Five Magic Numbers)

- Bandwidth (in MHz)
 - Minimum redshift – Maximum redshift
- Resolution Bandwidth (in kHz)
 - Redshift resolution
- Minimum Angular coverage (in steradians)
 - Minimum required size of sky patch needed (lowest k mode?)
- Maximum Angular Resolution (in steradians)
 - Or size of angular pixel
 - Maximum tolerable size of telescope beam
- Amplitude sensitivity (in Kelvin)
 - For a given angular pixel
 - at a given frequency
 - for a given resolution bandwidth

The Story

- Who?
 - Hee Jong? and Alberto?
- What?
 - A status presentation
 - A final presentation
 - A note
- When?
 - A status presentation – next week?
 - A final presentation – in 2-3 weeks?
 - A note – in 4 weeks?
- How?
 - Guided by John, Albert, Scott, and Nick
 - Pestered by Dave