WALLABY – the ASKAP HI All-Sky Survey

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500,000 HI detections, ie. 500,000 redshifts, HI & dynamical masses, ...

Koribalski et al. 2004

Walter et al. 2008

Verheijen et al. 2007

Zwaan et al. 2005

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Koribalski et al. 2004
ASKAP HI (21-cm) All-Sky Survey

ASKAP uv-coverage: 30 / 36 antennas

HIPASS supercube made by Russell Jurek, 3D visualisation by Amr Hassan & Chris Fluke

1200 × ASKAP HI cube, 6k × 6k × 16k

Archive
WALLABY Update

- ASKAP: 36 x 12-m antennas
  - 30 antennas within 2-km (30")
  - + 6 antennas within 6-km (10")

- Pixel size: 10" \(\approx 3"\)

- Field of view: \(\approx 30\) sq degr (i.e. 400x ATCA primary beam)

- Cubes: \(2k \times 2k \times 16k \Rightarrow \geq 6k \times 6k \times 16k\)

- Velocity coverage: -2,000 to 77,000 km/s \((z = 0.26)\)
  - BW = 300 MHz divided into 16,384 channels

- Sky coverage: -90 degr to + 30 degr

- Approx. 1200 cubes: 330 TB \(\Rightarrow 3300\) TB
• our representatives on ASKAP working groups

1) **ASKAP Simulations & Imaging**: Tobias Westmeier  
   (back-ups: Chris Power?, Chris Blake?, Martin Meyer?, …)

2) **Source Finding**: Tobias Westmeier  
   (back-ups: Russell Jurek, Matthew Whiting, …)

3) **Survey Strategy**: BK & LSS  
   (back-ups: Bradley Warren?, …)

4) **BETA & Commissioning**: BK & LSS  
   (back-ups: Tobias Westmeier?, Virginia Kilborn?, …)

5) **Data Format & Access**: Russell Jurek  
   (back-ups: Chris Harris?, Peter Quinn?, …)

**TASK:** contribute to the [ASKAP Internal Review](#).  
Monthly ASKAP WG meetings (mostly at ATNF); 1h each.  
Details on Redmine ASKAP wiki.
WALLABY – Working Groups

- **our Technical Working groups**
  - TWG1 - Numerical Simulations & Mock Surveys: C Power (C Blake)
  - TWG2 - Survey Strategy & Commissioning: BK & LSS
  - TWG3 - Data processing and imaging: M Whiting
  - TWG4 – Source Finding & Cataloging: T Westmeier
  - TWG5 - Data Format, Access & Visualisation: R Jurek & C Fluke
  - TWG6 - Stacking: Martin Meyer
  - new TWG7 - Public Outreach: Jayanne English

High activity required; regular WG meetings; etc. Details on Sakai WALLABY wiki.
• our Science Working groups

• SWG1 – Local Group: E Ryan-Weber
• SWG2 – Local Universe: B Koribalski & G Meurer
• SWG3 – Galaxy Environments: V Kilborn
• SWG4 – Intergalactic HI: B Wakker
• SWG5 – HI Mass Function: M Zwaan
• SWG6 – Large-scale structure: J Mould
• SWG7 – Galaxy clusters: M Verheijen
• SWG8 – Galactic Halo: J Kerp

TASK: contribute to WALLABY overview paper.
To achieve all-sky coverage we require \( \approx 1200 \) ASKAP pointings (left), integrate 8h each (\( \delta < 30 \text{ degr} \)) + \( \approx 1300 \) WSRT/Apertif pointings (right), 4h each (\( \delta > 30 \text{ degr} \)) to the same sensitivity and resolution.
Call for Proposals (deadline is Sep 22)

• WSRT + APERTIF: 12 ×25-m antennas (east-west array)
• Field of view: 8 square degrees

Propose: WASP@21

“Widefield Apertif Survey Project at 21-cm”

• sky coverage: +30 degr to + 90 degr
• approx. 1300 pointings
• same sensitivity and resolution as WALLABY
• int. time: ≈ 4 hours (requires mosaicing)
2MASS
(Jarrett 2003)
Mapping the HI Universe

multi-frequency synergies: radio + optical + IR + UV