

Previous PHISCC workshops

- **2009 June 6:** Groningen (after *Panoramic Radio Astronomy*)
- **2009 Nov 16-19:** Bunker Bay, WA
- **2010 May 2-6:** Arniston, RSA
- **2011 Feb 2-4:** Perth Zoo
- **2011 June 14-18:** Kloster Seeon, Germany
- **2012 Jan 30-Feb 2:** Cape Town



Pre-PHISCC RFI workshop (17-18 June)

- › RFI is IMPORTANT and will be one of main limitations and analysis hurdles for ALL HI pathfinder surveys
- › Data shown from Parkes, ATCA, VLA, Arecibo, WSRT all demonstrate this
- › SPO/SKA site surveys so far unhelpful for characterising satellite RFI
- › Good automated flaggers now exist (AOFLAGGER)
- › Much more could be done (adaptive filtering and nulling)
- › *Summary at this meeting by Lisa Harvey-Smith*

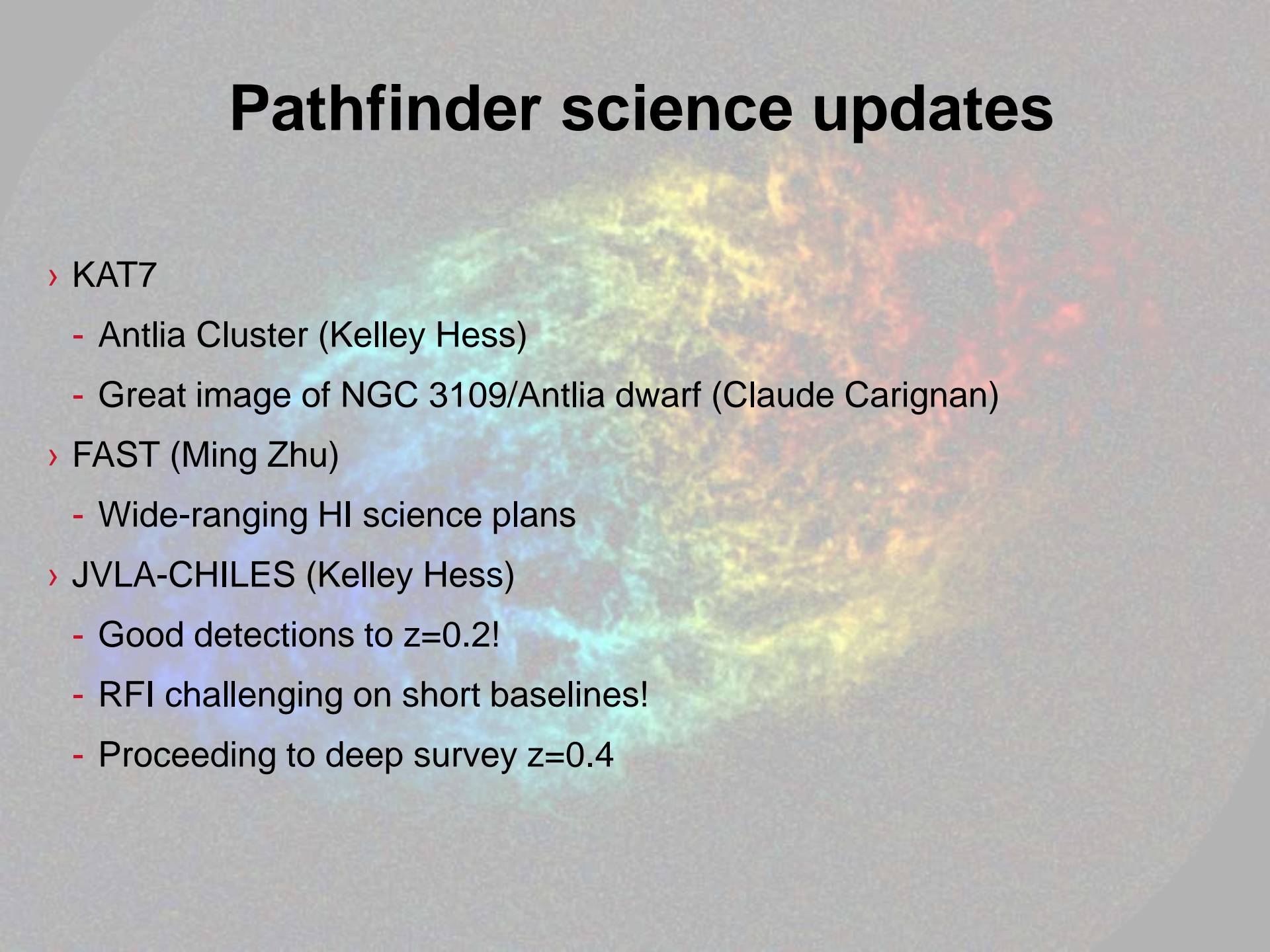
Pathfinder instrument updates

- › ASKAP (Tim Shimwell)
 - MkI (x6) and MkII (x18-24) continues (Mk II Tsys measurement awaited!)
 - Beamshapes measured at different frequencies with Parkes-Patriot interferometer
- › MeerKAT (Claude Carignan)
 - KAT7 commissioning
 - Large science programs 2018-2020 (or 21)
- › APERTIF (Tom Oosterloo)
 - Ongoing; worrying about call for proposals and science data reduction
- › FAST (Ming Zhu)
 - Big hole in ground; towers going up!
 - Nice 3D simulation!

SKA update and discussion

- › SKA activities taking off (Minh Huynh)!
 - SKA1 baseline design
 - Science assessment workshops
- › SKA1 baseline discussion (Tom Oosterloo, Minh, LSS, notes by Lisa)
 - Worried about SKA1 configuration (need to produce sensitivity v resolution plots)
 - Missing user model (e.g. how many hrs per project on SKA1-mid?)
 - No mention of RFI (except in glossary!)
 - Archive?

Pathfinder science updates



- › KAT7
 - Antlia Cluster (Kelley Hess)
 - Great image of NGC 3109/Antlia dwarf (Claude Carignan)
- › FAST (Ming Zhu)
 - Wide-ranging HI science plans
- › JVLA-CHILES (Kelley Hess)
 - Good detections to $z=0.2$!
 - RFI challenging on short baselines!
 - Proceeding to deep survey $z=0.4$

Velocity fields at kpc scales - I

- › LVHIS and friends (Baerbel Koribalski)
 - THINGS is “best thing to happen in HI astronomy in last decade” (Tom Oosterloo)
 - WISE NIR-HI star formation laws (Tom Jarrett)
 - Beam smearing is important (Ed Elson)
- › Early-type galaxies (ETGs)
 - Only 20% are dispersion-dominated (Lisa Fogerty)
 - ATLAS3D (Paolo Serra)
 - 40% of non-cluster ETGs have HI (in a disk or ring)

Velocity fields at kpc scales - II

- › HALOGAS (Thijs van der Hulst)
 - Asymmetries important in velocity field analysis
 - Need to clearly define problem we are analysing
- › VIVA (Aeree Chung)
 - Ram pressure stripping history results in multiple asymmetries

Velocity fields at kpc scales - III

- › Large optical velocity field surveys
 - SAMI and a galactic wind (Lisa Fogerty)
 - SAMI velocity functions (Geraint Lewis)
 - Much more accuracy than single fibre (revolution, not evolution)
 - CALIFA bars (Kristine Spekkens)
 - 20% of galaxies have kinematics different than expected from morphology
 - WIYN/WiFeS (Moses Mogotsi)
 - SINGG-SUNGG sample
- › “Bright future for joint IFU and HI surveys” (Paolo Serra)

Velocity fields at Mpc scales

TULLY-FISHER & FUNDAMENTAL PLANE

- › 2MTF (Tao Hong)
 - Great 2MASS-HI TF relation!
- › 6dFGS (Chris Springob)
 - Large residual bulk flow – 340 km/s
- › Look – no inclinations! (Danail Obreschkow)
 - Can recover TF relation with no optical inclinations
 - Better than bad inclinations
- › Look – no detections! (Scott Meyer)
 - Can stack TF relation with or without inclinations
- › Look – no optical data! (Danail Obreschkow)
 - HI TF relation has high scatter unfortunately

Environment matters

- › DENSITY-MORPHOLOGY/GAS RELATIONS
 - Does it extend all the way to poor groups? SDSS/ALFALFA suggests yes! (Kelley Hess)
 - Ram Pressure stripping probably primary cause of evolution in high density regions (Aeree Chung)
 - Even ATLAS3D ETGs show negative correlation M_{HI}/L_K v density (Paolo Serra)
- › ONE OF THE MOST IMPORTANT AREAS THAT FUTURE HI SURVEYS CAN ADDRESS

Onward to higher redshifts

- › $z=0$ to 0.1 stacking at Parkes (Jacinta Delhaize)
 - Accurate cosmic HI mass density
 - No evolution
- › $z=0.1$ direct detections at Arecibo (Laura Hoppmann)
 - HIMF looks similar to local Universe
- › $z=0.1$ to 0.2 stacking at WSRT (Jonghwan Rhee)
 - No evolution; errors going down!
- › Redshift errors important (Natasha Maddox)
- › HI absorbers
 - Local galaxies (James Allison, Sarah Reeves)
 - Blind surveys are the way to go (Sarah, Stephen Curran)



Technical Successes



› HIPASS2

- New streams seen (Ivy Wong)

› OPTICALLY-MOTIVATED SOURCE-FINDING

- New generation of non-blind surveys? (Attila Popping)

› SOFIA

- Next-gen source-finding pipeline (Tobias Westmeier)

› KINEMATIC PIPELINES

- Conceptual pipeline (Kristine Spekkens)
 - (1) diskfit
 - (2) TiRiFiC automation (Peter Kamphuis)
 - (3) ROTCUR algorithms and automation (Se-Heon Oh)

Challenges

- › RFI (again)
 - JVLA (Kelley Hess)
 - Arecibo (Laura Hoppmann)
 - GBT (Stephen Curran)
 - SKA sites (Oleg Smirnov)
- › Data Processing
 - Are our kinematic models accurate enough? (Thijs van der Hulst)
 - Will our software be fast and accurate enough? (Tom Oosterloo)
 - Do we understand our analysis techniques and sidelobes – will deep stacking work? (Oleg Smirnov)



With apologies to Dr Strangelove

OUTLINE OF DISCUSSIONS (SYD, NL, RUTGERS, GRONINGEN, UCT)

- › Pathfinder discussions:
 - ASKAP early science program
 - APERTIF strawman surveys
 - FAST call for proposals
 - MeerKAT/SKA1-mid transition
- › Future (ongoing) priorities: (a) RFI; (b) data
- › Add galaxy simulator member to PHISCC
- › Coordination SKA1 sensitivity v resolution simulations
- › Invite attendance by SDP specialists at future workshops
- › Next meeting **2014 March 17-19** in Dwingeloo, NL (after 3D2014)
- › Elected Marc Verheijen as new PHISCC chair



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- › Pre-workshop RFI meeting (Lisa Harvey-Smith and Tim Shimwell)
- › PHISCC Organisers (Elaine Sadler and Kylie Williams)!
- › See you in Dwingeloo in 2014!



Enjoy Hamilton Island!
Feeding, Fireworks and Feedback

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