2014 Chapter Review

Stefano Carnera

Department of Physics, Alma Felix University of Turin, Italy

UNIVERSITÀ DI TORINO

Physics Torino Department of Excellence

INFN TORINO Istituto Nazionale di Fisica Nucleare Sezione di Torino

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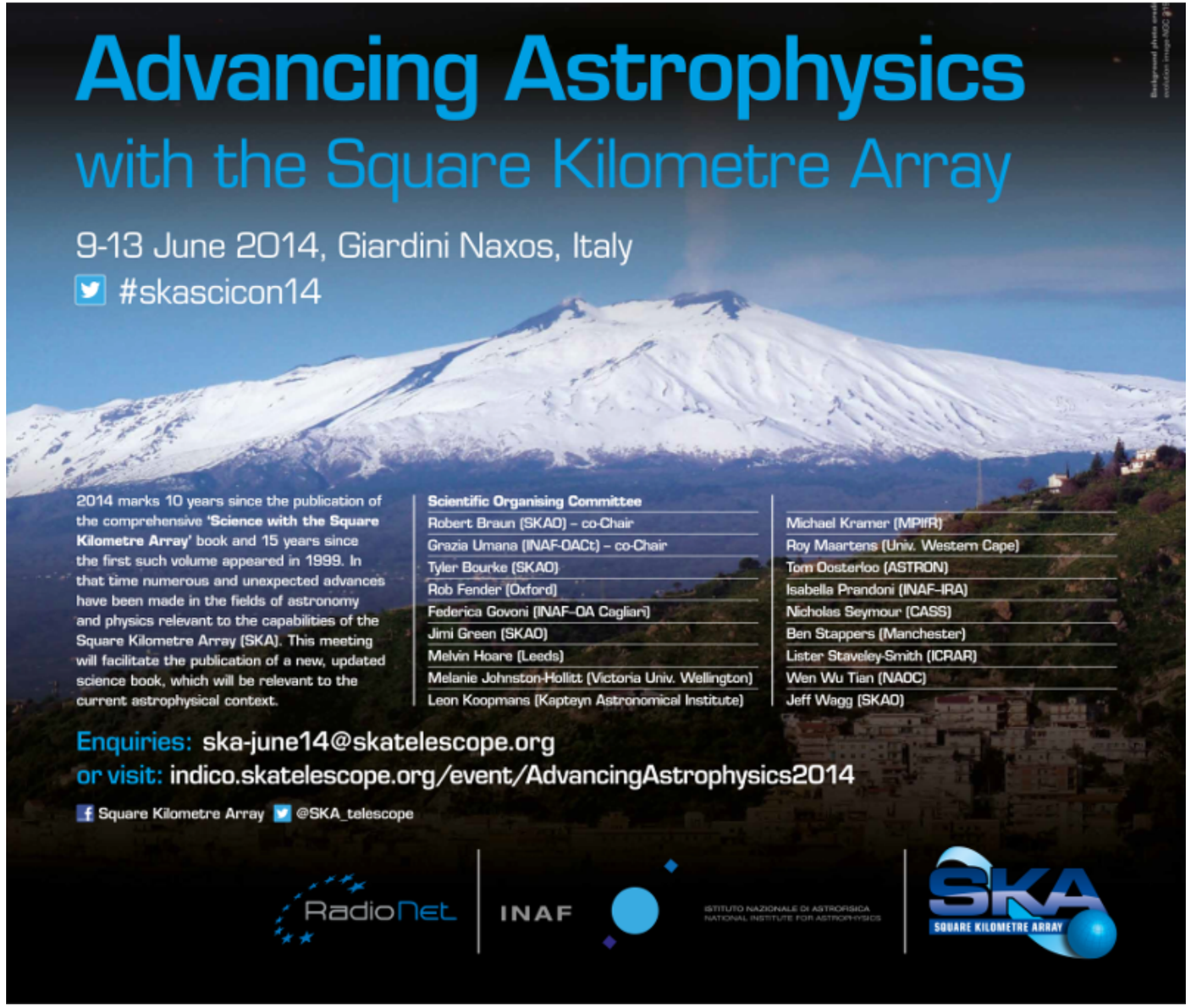
SKA White Book 2014



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[PoS AASKA14 (2015a...r)]

Session 2: Cosmology

Overview of Cosmology with the SKA
PoS(AASKA14)016 pdf *R. Maartens, F.B. Abdalla, M. Jarvis and M.G. Santos*

Cosmology from HI galaxy surveys with the SKA
PoS(AASKA14)017 pdf *F.B. Abdalla, P. Bull, S. Camera, A. Benoit Levy, B. Joachimi, D. Kirk, H.R. Kloeckner, R. Maartens, A. Raccanelli, M.G. Santos and G.B. Zhao*

Cosmology with SKA Radio Continuum Surveys
PoS(AASKA14)018 pdf *M. Jarvis, D.J. Bacon, C. Blake, M.L. Brown, S. Lindsay, A. Raccanelli, M. Santos and D.J. Schwarz*

Cosmology from a SKA HI intensity mapping survey
PoS(AASKA14)019 pdf *M. Santos, P. Bull, D. Alonso, S. Camera, P. Ferreira, G. Bernardi, R. Maartens, M. Viel, F. Villaescusa-Navarro, F.B. Abdalla, M. Jarvis, R.B. Metcalf, A. Pourtsidou and L. Wolz*

Cross correlation surveys with the Square Kilometre Array
PoS(AASKA14)020 pdf *D. Kirk, F.B. Abdalla, A. Benoit Levy, P. Bull and B. Joachimi*

HI galaxy simulations for the SKA: number counts and bias
PoS(AASKA14)021 pdf *M. Santos, D. Alonso, P. Bull, M.B. Silva and S. Yahya*

Weak gravitational lensing with the Square Kilometre Array
PoS(AASKA14)023 pdf *M.L. Brown, D.J. Bacon, S. Camera, I. Harrison, B. Joachimi, R.B. Metcalf, A. Pourtsidou, K. Takahashi, J. Zuntz, F.B. Abdalla, S. Bridle, M. Jarvis, T. Kitching, L. Miller and P. Patel*

Measuring baryon acoustic oscillations with future SKA surveys
PoS(AASKA14)024 pdf *P. Bull, S. Camera, A. Raccanelli, C. Blake, P. Ferreira, M. Santos and D.J. Schwarz*

Cosmology on the Largest Scales with the SKA
PoS(AASKA14)025 pdf *S. Camera, A. Raccanelli, P. Bull, D. Bertacca, X. Chen, P. Ferreira, M. Kunz, R. Maartens, Y. Mao, M. Santos, P.R. Shapiro, M. Viel and Y. Xu*

Real time cosmology - A direct measure of the expansion rate of the Universe with the SKA
PoS(AASKA14)027 pdf *H.R. Kloeckner, D. Obreschkow, C. Martins, A. Raccanelli, D. Champion, A. Roy, A. Lobanov, J. Wagner and R. Keller*

Weak Lensing Simulations for the SKA
PoS(AASKA14)030 pdf *P. Patel, I. Harrison, S. Makhathini, F.B. Abdalla, D.J. Bacon, M.L. Brown, M. Jarvis, O. Smirnov and I. Heywood*

Measuring redshift-space distortion with future SKA surveys
PoS(AASKA14)031 pdf *A. Raccanelli, P. Bull, S. Camera, C. Blake, P. Ferreira, R. Maartens, M. Santos, P. Bull, D.J. Bacon, O. Doré, P. Ferreira, M.G. Santos, M. Viel and G.B. Zhao*

Testing foundations of modern cosmology with SKA all-sky surveys
PoS(AASKA14)032 pdf *D.J. Schwarz, D.J. Bacon, S. Chen, C. Clarkson, D. Huterer, M. Kunz, R. Maartens, A. Raccanelli, M. Rubart and J.L. Starck*

Topology of neutral hydrogen distribution with the Square Kilometre Array
PoS(AASKA14)033 pdf *Y. Wang, Y. Xu, F. Wu, X. Chen, X. Wang, J. Kim, C. Park, K.G. Lee and R. Cen*

Cosmology with galaxy clusters: studying the Dark Ages and the Epoch of Reionization in the SKA era
PoS(AASKA14)034 pdf *S. Colafrancesco, P. Marchegiani and M.S. Emritte*

Foreground Subtraction in Intensity Mapping with the SKA
PoS(AASKA14)035 pdf *L. Wolz, F.B. Abdalla, D. Alonso, C. Blake, P. Bull, T.C. Chang, P. Ferreira, C.Y. Kuo, M. Santos and J.R. Shaw*

Model-independent constraints on dark energy and modified gravity with the SKA
PoS(AASKA14)165 pdf *G. Zhao, D.J. Bacon, R. Maartens, M. Santos and A. Raccanelli*

Stacking of SKA data: comparing uv-plane and and image-plane stacking
PoS(AASKA14)168 pdf *K.K. Knudsen, L. Lindroos, W.H.T. Vlemmings, J.E. Conway and I. Marti-Vidal*

SKA White Book 2014

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- 18 cosmology chapters in the SKA White Book 2014 (AASKA14):
  - 1 overview
  - 3 on science cases (BAO, RSD, and ultra-large scales)
  - 5 on probes (continuum gals, HI gals, HI intensity mapping, weak lensing, clusters)
  - 1 on simulations (HI galaxies)
  - 1 on foregrounds (intensity mapping foreground subtraction methods)
  - 2 on cross-correlations (+4 in another session/section!)
  - 2 on fundamental physics (Copernican principle and modified gravity)
  - 3 on new techniques (redshift drift, topology, stacking)

SKA White Book 2024?

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- My very personal opinion for the SKA White Book 2024:
  - 2014 3 science cases:
    - BAO – 2-point function? Reconstruction? Build on DESI claim for dark energy (most of the drive comes from low redshift, so good chance for HI galaxies)?
    - RSD – Clustering wedges? EFTofLSS approach to mildly non-linear scales?
    - Ultra-large scales – Cross-correlations; faint-bright galaxy splint (new at radio wavelengths); multi-tracer; dipole of the 2-pt correlation function; bispectrum!

SKA White Book 2024?

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- My very personal opinion for the SKA White Book 2024:
  - 2014 5 probes:
    - Continuum galaxies – Lessons learnt (ASKAP, LOFAR)? Importance of modelling (RSD, weak lensing magnification)?
    - HI galaxies – Lessons learnt (eBOSS, DESI, Euclid)? Peculiar velocities?
    - HI intensity mapping – Lessons learnt (MeerKLASS, CHIME, ...)? Transfer function? Internal multi-tracing (to remove systematics)? Advanced modelling (foregrounds, RFI, beam, ...)?
    - Weak lensing – Lessons learnt (SuperCLASS)? Shear estimate in the radio? Super-resolution? Multi-wavelength self-calibration?
    - Clusters – Any chance to do cluster science?

SKA White Book 2024?

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- My very personal opinion for the SKA White Book 2024:
  - Simulations – T-RECS? Semi-analytical approaches (e.g. PINOCCHIO, COLA, ...)? Lognormal simulations (GLASS!)?
  - Cross-correlations – A more systematic approach is needed (survey-based? Probe-based? Target-based?) Also, let's not forget GWs!
  - New techniques – Field-based/likelihood-free inference? Counts in cells? Marked statistics? Machine learning!
  - Fundamental physics – Is there anything unique we can do in the radio?