

Prof Rodney A. Kennedy – Unofficial Homepage

Research School of Engineering
College of Engineering and Computer Science
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Biography: Rodney A. Kennedy has been Full Professor in Engineering at the Australian National University since 2000 and is currently the Head of the Applied Signal Processing research group and the Associate Director (Education) within the Research School of Engineering. He is an electrical engineer with research specialization in wireless communications, signal processing and audio signal processing.

He has been Head of the Departments of Information Engineering and Telecommunications Engineering in the Research School of Information Sciences and Engineering between 1994 and 2008, and Director of Research 2009–2010. Professor Kennedy has received over 30 external grants and industry contracts/university consultancies including 15 ARC grants. In addition he has a leading participant in major research centers including the Cooperative Research Centre for Robust and Adaptive Systems (CRASys), National ICT Australia (NICTA) and the ARC Communications Research Network (ACoRN).

He is an IEEE Fellow and has published in excess of 350 journal papers, conference papers and patents, and has supervised over 45 PhD students. He was an Associate editor for 11 years in the IEEE Transactions on Communications and a member of a number of journal editorial boards. He is a former QEII Fellow and recipient of a number awards including the ATERB medal and the UNSW University medal.

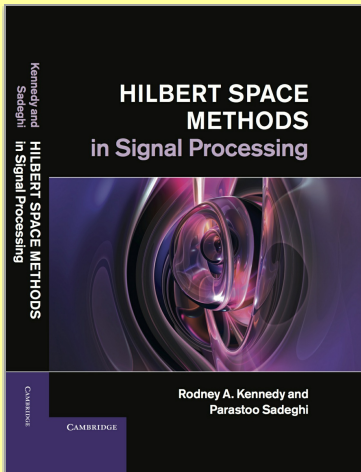
News

- Nov 2014 — ARC Discovery Project DP150101011 , *Harnessing Spherical Geometry in Scientific and Engineering Data Processing*, with CI Salman Durrani and PI Jason McEwen (MSSL-UCL) secured research funding. The overall success rate for Discovery Projects for funding commencing in 2015 is 18 per cent. The grant also came with 2 ICA awards, which have a 13 per cent success rate.
- Jul 2014 — Presentation for Royal Society meeting “Science on the Sphere”.
- May 2014 — Three 2014 ICASSP papers have been presented in Florence (these can be downloaded below).
- Mar 2014 — 22nd Int. Conf. on Telecommunications ICT will be held in Sydney, Australia, 27-29 April 2015, right after ICASSP 2015 in Brisbane.
- Feb 2014 — Three 2014 ICASSP papers have been accepted and will be presented in Florence in May.
- Jan 2014 — Two 2014 ICC papers have been accepted and will be presented in Sydney in June.

Research Interests

- signal processing theory and algorithms
with applications in wireless communications, audio and acoustics, and astrophysics
- signal representations, signal concentration, dimensionality, uncertainty principles
- Hilbert space and spectral methods
- time-frequency and spatio-spectral methods
- relay cooperative networks
- timing, frequency and carrier synchronization
- decode-and-forward (DF) and amplify-and-forward (AF) relaying networks,
channel estimation, multi-parameter estimation
- 2-sphere or spherical domain signal processing, commutative anisotropic convolution
- medical image registration
- compressed sensing methods for sparse systems

Recent Publications



My Recent Publications: most can be found here at:

- [DBLP: Rodney A. Kennedy](#),

which also lists my arxiv.org preprints. This listing excludes my 2013 book, (written with co-author A/Prof Parastoo Sadeghi),

- [Hilbert Space Methods in Signal Processing](#),

and excludes book chapters, papers in Physics journals (such as JASA) and most conference papers.

A reverse chronological list of most of my publications can be obtained by following this [@pubs.html](#) link@.

Publications 2015 (including arXiv preprints)

- [1] A. A. Nasir, X. Zhou, S. Durrani, and R. A. Kennedy, "Wireless-Powered Relays in Cooperative Communications: Time-Switching Relaying Protocols and Throughput Analysis", *IEEE Trans. Commun.*, 2015.

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DOI: [10.1109/TCOMM.2015.2415480](#) PDF: [1310.7648](#) Google-Scholar: [\[1\]](#) arXiv: <http://arxiv.org/abs/1310.7648>

- [2] Y. F. Alem, Z. Khalid, and R. A. Kennedy, "3D Spatial Fading Correlation for Uniform Angle of Arrival Distribution", *IEEE Commun. Lett.*, 2015.

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DOI: [10.1109/LCOMM.2015.2414414](#) PDF: [spatcorr-uniform-preprint.pdf](#) Google-Scholar: [\[link\]](#)

- [3] P. D. Samarasinghe and R. A. Kennedy, "Analysis and Performance of CMA Blind Deconvolution for Image Restoration", *Int. J. Adapt. Control Signal Process.*, 2015.

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DOI: [10.1002/acs.2526](#) PDF: [acs2526.pdf](#) Google-Scholar: [\[link\]](#)

- [4] M. Zhang, R. A. Kennedy, and T. D. Abhayapala, "Empirical Determination of Frequency Representation in Spherical Harmonics-based HRTF Functional Modeling", *IEEE/ACM Trans. Audio Speech Language Process.*, vol. 23, no. 2, pp. 351-360, February 2015.

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DOI: [10.1109/TASLP.2014.2381881](#) PDF: [06987336.pdf](#) Google-Scholar: [\[link\]](#)

- [5] Y. Cong, X. Zhou, and R. A. Kennedy, "Interference Prediction in Mobile Ad Hoc Networks with a General Mobility Model", *IEEE Trans. Wireless Commun.*, 2015.

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- [6] A. P. Bates, Z. Khalid, and R. A. Kennedy, "Novel Sampling Scheme on the Sphere for Head-Related Transfer Function Measurements", *IEEE/ACM Trans. Audio Speech Language Process.*, 2015.

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DOI: [10.1109/TASLP.2015.2419971](#) PDF: [bates-preprint.pdf](#)

- [7] A. P. Bates, Z. Khalid, and R. A. Kennedy, "An Optimal Dimensionality Sampling Scheme on the Sphere for Antipodal Signals in Diffusion Magnetic Resonance Imaging", *Proc. IEEE Int. Conf. Acoustics, Speech and Signal Processing, ICASSP'2015*, Brisbane, Australia, April 2015 (accepted 15 January 2015).

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- [8] N. Ding, R. A. Kennedy, and P. Sadeghi, "Fairest Solution in Constant Sum-rate Transmission Strategies for Cooperative Data Exchange: An M-convex Minimization Approach", *Proc. 22nd Int. Conf. on Telecommunications*, Sydney, Australia, April 2015.

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- [9] Z. Khalid and R. A. Kennedy, "Maximal Multiplicative Spatial-Spectral Concentration on the Sphere: Optimal Basis", *Proc. IEEE Int. Conf. Acoustics, Speech and Signal Processing, ICASSP'2015*, Brisbane, Australia, April 2015 (accepted 15 January 2015).

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- [10] Z. Khalid and R. A. Kennedy, "Spherical Harmonic Transform for Minimum Dimensionality Regular Grid Sampling on the Sphere", *Proc. IEEE Int. Conf. Acoustics, Speech and Signal Processing, ICASSP'2015*, Brisbane, Australia, April 2015 (accepted 15 January 2015).

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Publications 2014

- [1] Z. Khalid and R. A. Kennedy, "On the Placement of Latitudes in Iso-Latitude Optimal-Dimensionality Sampling Schemes on the Sphere", *Proc. Int. Conf. Signal Processing and Communication Systems, ICSPCS'2014*, Gold Coast, Australia, pp. 7, December 2014.

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- [2] Z. Khalid and R. A. Kennedy, "Iterative Method to Compute the Maximal Concentration Slepian Band-limited Eigenfunction on the Sphere", *Proc. Int. Conf. Signal Processing and Communication Systems, ICSPCS'2014*, Gold Coast, Australia, pp. 8, December 2014.

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- [3] Z. Khalid, R. A. Kennedy, and J. D. McEwen, "An Optimal-Dimensionality Sampling Scheme on the Sphere with Fast Spherical Harmonic Transforms", *IEEE Trans. Signal Process.*, vol. 62, no. 17, pp. 4597-4610, September 2014.

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DOI: [10.1109/TSP.2014.2337278](#) PDF: [06850040.pdf](#) Google-Scholar: [\[6\]](#) arXiv: <http://arxiv.org/abs/1403.4661>

- [4] O. H. Salim, A. A. Nasir, H. Mehrpouyan, W. Xiang, S. Durrani, and R. A. Kennedy, "Channel, Phase Noise, and Frequency Offset in OFDM Systems: Joint Estimation, Data Detection, and Hybrid Cramér-Rao Lower Bound", *IEEE Trans. Commun.*, vol. 62, no. 9, pp. 3311-3325, September 2014.

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- [6] O. H. Salim, A. A. Nasir, W. Xiang, and R. A. Kennedy, "Joint channel, phase noise, and carrier frequency offset estimation in cooperative OFDM systems", *Proc. IEEE Int. Conf. on Communications, ICC'2014*, Sydney, Australia, pp. 4384-4389, June 2014.

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- [7] Z. Khalid, R. A. Kennedy, S. Durrani, and P. Sadeghi, "Adaptive Multi-Resolution Windowing Technique for Localized Spatio-Spectral Analysis", *Proc. 2014 IEEE Workshop on Statistical Signal Processing, SSP'14*, Gold Coast, Australia, pp. 41-44, June 2014.

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- [8] P. Sadeghi, R. A. Kennedy, and Z. Khalid, "Minimum Mean Square Error Equalization on the 2-Sphere", *Proc. 2014 IEEE Workshop on Statistical Signal Processing, SSP'14*, Gold Coast, Australia, pp. 101-104, June 2014.

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- [9] A. A. Nasir, H. Mehrpouyan, S. Durrani, S. D. Blostein, and R. A. Kennedy, "Training-based synchronization and channel estimation in AF two-way relaying networks", *Proc. 15th IEEE Int. Work. on Signal Processing Advances in Wireless Communications, SPAWC 2014*, Toronto, Canada, pp. 269-273, June 2014.

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- [11] Y. Alem, Z. Khalid, and R. A. Kennedy, "Band-Limited Extrapolation on the Sphere for Signal Reconstruction in the Presence of Noise", *Proc. IEEE Int. Conf. Acoustics, Speech and Signal Processing, ICASSP'2014*, Florence, Italy, pp. 4141-4145, May 2014.

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- [12] R. A. Kennedy, Z. Khalid, and P. Sadeghi, "Efficient Kernel-Based Formulations of Spatio-Spectral and Related Transformations on the 2-Sphere", *Proc. IEEE Int. Conf. Acoustics, Speech and Signal Processing, ICASSP'2014*, Florence, Italy, pp. 310-314, May 2014.

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- [13] D. H. Chae, N. H. Kim, Y. F. Alem, S. Durrani, and R. A. Kennedy, "Dynamic Fractional Frequency Reuse Method for Self-Organizing Smallcell Network", *Proc. 79th IEEE Vehicular Technology Conference (VTC Spring)*, Seoul, South Korea, pp. 5, May 2014.

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- [14] A. O. Isikman, H. Mehrpouyan, A. A. Nasir, A. G. Amat, and R. A. Kennedy, "Joint Phase Noise Estimation and Data Detection in Coded MIMO systems", *IET Commun.*, vol. 8, no. 7, pp. 981-989, 2014.

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- [1] R. A. Kennedy, Z. Khalid, and Y. F. Alem, "Spatial Correlation from Multipath with 3D Power Distributions having Rotational Symmetry", *Proc. Int. Conf. Signal Processing and Communication Systems, ICSPCS'2013*, Gold Coast, Australia, pp. 7, December 2013.

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- [2] Y. F. Alem, A. Salehin, D. H. Chae, and R. A. Kennedy, "Sparse Recovery of Spherical Harmonic Expansions from Uniform Distribution on Sphere", *Proc. Int. Conf. Signal Processing and Communication Systems, ICSPCS'2013*, Gold Coast, Australia, pp. 5, December 2013.

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- [4] R. A. Kennedy, P. Sadeghi, Z. Khalid, and J. D. McEwen, "Classification and construction of closed-form kernels for signal representation on the 2-sphere", *Proc. SPIE 8858, Wavelets and Sparsity XV*, no. 88580M, San Diego, CA, pp. 13, September 2013.

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- [5] Z. Khalid, R. A. Kennedy, P. Sadeghi, and S. Durrani, "Spatio-spectral formulation and design of spatially varying filters for signal estimation on 2-Sphere", *Proc. SPIE 8858, Wavelets and Sparsity XV*, no. 88580L, San Diego, CA, pp. 13, September 2013.

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- [8] A. A. Nasir, H. Mehrpouyan, S. Durrani, S. D. Blostein, R. A. Kennedy, and B. Ottersten, "Transceiver design for distributed STBC based AF cooperative networks in the presence of timing and frequency offsets", *IEEE Trans. Signal Process.*, vol. 61, no. 12, pp. 3143-3158, June 2013.

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