

# List of Publications

**Name:** Olav Emerik Tirkkonen

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## A Peer Reviewed Scientific Articles

### A.1 Peer Reviewed Journal Articles

- [1] B. Singh, O. Tirkkonen, Z. Li and M. Uusitalo, "Contention-Based Access for Ultra-Reliable Low Latency Uplink Transmissions," *IEEE Wireless Commun. Letters*, in press.
- [2] R.-A. Pitaval, L. Wei, O. Tirkkonen and C. Hollanti, "Density of Spherically-Embedded Stiefel and Grassmann Codes," *IEEE Transactions on Information Theory*, in press.
- [3] F. Ahmed, A. Dowhuszko and O. Tirkkonen, "Self-organizing Algorithms for Interference Coordination in Small Cell Networks," *IEEE Transactions on Vehicular Technology*, vol. 66, no. 9, pp. 8333–8346, Sept 2017.
- [4] N. Ermolova and O. Tirkkonen, "Interference Analysis in Wireless Networks Operating over Arbitrary Fading Channels with Heterogeneous Poisson Fields of Transmitters," *IEEE Signal Processing Letters*, vol. 24, no. 9, pp. 1388–1392, July 2017.
- [5] J. Deng, O. Tirkkonen, R. Freij-Hollanti, T. Chen and N. Nikaein, "Resource Allocation and Interference Management for Opportunistic Relaying in Integrated mmWave/sub-6GHz 5G Networks," *IEEE Communications Magazine*, vol. 55, no. 6, pp. 94–101, June 2017.
- [6] L. Wei, R.-A. Pitaval, J. Corander and O. Tirkkonen, "From Random Matrix Theory to Coding Theory: Volume of a Metric Ball in Unitary Group," *IEEE Transactions on Information Theory*, vol. 63, no. 5, pp. 2814–2821, May 2017.
- [7] J. Xu, X. Yan, Y. Zhu, J. Wang, Y. Yang, X. Ge, G. Mao and O. Tirkkonen, "Statistical Analysis of Path Losses for Sectorized Wireless Networks," *IEEE Transactions on Communications*, vol. 65, no. 4, pp. 1828–1838, April 2017.
- [8] Y. Beyene, R. Jäntti, O. Tirkkonen, K. Ruttik, S. Irajli, A. Larmo, T. Tirronen and J. Torsner, "NB-IoT Technology Overview and Experience from Cloud-RAN Implementation," *IEEE Wireless Communications*, vol. 24, no. 3, pp. 26–32, March 2017.
- [9] R.-A. Pitaval, L. Wei, O. Tirkkonen and J. Corander, "Volume of Metric Balls in High-Dimensional Complex Grassmann Manifolds," *IEEE Transactions on Information Theory*, vol. 62, no. 9, pp. 5105–5116, Sept. 2016.
- [10] N. Ermolova and O. Tirkkonen, "Consensus-based Spectrum Sensing in Cognitive Radio Networks," *Cognitive Communications, EAI Trans. Cognitive Communications*, 16(7): e1, pp. 1–8, Sep 2016.
- [11] J. Liu, G. Wu, S. Li and O. Tirkkonen, "On Fixed-point Implementation of Log-MPA for SCMA Signals," *IEEE Wireless Communications Letters*, vol. 5, no. 3, pp. 324–327, June 2016.

- [12] M. Bhatnagar, R. Mallik and O. Tirkkonen, "Performance Evaluation of Best-Path Selection in a Multihop Decode-and-Forward Cooperative System," *IEEE Transactions on Vehicular Technology*, vol. 65, no. 4, pp. 2722-2728, April 2016.
- [13] U. Oruthota, F. Ahmed, O. Tirkkonen, "Ultra-Reliable Link Adaptation for Downlink MISO Transmission in 5G Cellular Networks," *Information*, vol. 7, no.1, pp. 1–18, March 2016.
- [14] N. Ermolova and O. Tirkkonen, "Using beta distributions for modeling distances in random finite networks," *IEEE Communications Letters*, vol. 20, no. 2, pp. 308-311, Feb 2016.
- [15] F. Ahmed and O. Tirkkonen, "Simulated Annealing Variants for Self-organized Resource Allocation in Small Cell Networks," *Applied Soft Computing*, vol. 38, pp. 762-770, Jan 2016.
- [16] R.-A. Pitaval, O. Tirkkonen, R. Wichman, K. Pajukoski, E. Lähetkangas, E. Tirola, "Full-duplex Self-backhauling for Small-cell 5G Networks," *IEEE Wireless Communications*, vol. 22, no. 5, pp. 83-89, Oct 2015.
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- [18] B. Singh, S. Hailu, K. Koufos, A. A. Dowhuszko, O. Tirkkonen, R. Jäntti and R. Berry, "Coordination protocol for inter-operator spectrum sharing in co-primary 5G small cell networks," *IEEE Communications Magazine*, vol. 53, no. 7, pp. 34-40, July 2015.
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- [20] N. Ermolova and O. Tirkkonen, "Cumulative Distribution Function of Bivariate Gamma Distribution with Arbitrary Parameters and Applications," *IEEE Communications Letters*, vol. 19, no. 2, pp. 167-170, Feb 2015.
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## A.2 Book Chapters

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## A.3 Peer Reviewed International Conference Papers

- [81] C. Boyd, R. Vehkalahti and O. Tirkkonen, "Combinatorial Code Designs for Ultra-Reliable IoT Random Access", *IEEE PIMRC-Workshops*, 5 pp., Oct 2017.
- [82] O. Tirkkonen, Z. Li, L. Wei and A. Vinel, "On-Off Necklace Codes for Asynchronous Mutual Discovery", *IEEE PIMRC*, 6 pp., Oct 2017.
- [83] L. Zhou, O. Tirkkonen and R. Berry, "Two-Player D2D Interference Canceling Games", *IEEE PIMRC*, 7 pp., Oct 2017.
- [84] S. Lembo, J. Deng, R. Freij-Hollanti, O. Tirkkonen and T. Chen, "Hierarchical Network Abstraction for HetNet Coordination", *IEEE PIMRC*, 7 pp., Oct 2017.

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- [86] J. Deng, O. Tirkkonen, T. Chen and N. Nikaein, "Scalable two-hop relaying for mmWave networks," European Conf. on Networks and Communications (EuCNC), 6 pp., June 2017.
- [87] S. Lembo, O. Tirkkonen, M. Goldhamer and A. Kliks, "Coexistence of FDD flexible duplexing networks," European Conf. on Networks and Communications (EuCNC), 6 pp., June 2017.
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- [89] J. Liu, G. Wu, S. Li and O. Tirkkonen, "Blind Detection of Uplink Grant-Free SCMA with Unknown User Sparsity," IEEE ICC, 6 pp., May 2017.
- [90] O. Tirkkonen and C. Studer, "Subset-Codebook Precoding for 1-bit Massive Multiuser MIMO," Conf. Information Sci. and Systems, 5 pp., March 2017.
- [91] S. Hailu, M. Säily and O. Tirkkonen, "Towards a configurable state model for 5G radio access networks," Global Wireless Summit, 5 pp., Nov 2016.
- [92] B. Singh, O. Tirkkonen, Z. Li and M. Uusitalo, "Resource Allocation Strategy for Ultra-Reliable Communication in a Factory Environment," Global Wireless Summit, 5 pp., Nov 2016.
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- [97] J. Deng, A. Dowhuszko, R. Freij and O. Tirkkonen, "Relay Selection and Resource Allocation for D2D-Relaying under Uplink Cellular Power Control," IEEE Globecom, Workshop on Emerging Technologies for 5G Wireless Cellular Networks, 6 pp., Nov 2015.
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- [106] C. Boyd, R.-A. Pitaval, O. Tirkkonen and R. Wichman, "On the Time-Frequency Localisation of 5G Candidate Waveforms," Signal Processing Advances for Wireless Communications (SPAWC), 5 pp., June 2015.
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- [108] S. Lembo, A. Dowhuszko and O. Tirkkonen, "Joint Resource Allocation in Mobile Networks with Macro Cellular and Device-to-Device Communication," IEEE ICC, Workshop on Device-to-Device Communication for Cellular and Wireless Networks, 6 pp., June 2015.
- [109] B. Singh, K. Koufos, O. Tirkkonen and R. Berry, "Co-primary inter-operator spectrum sharing over a limited spectrum pool using repeated games," IEEE ICC, pp. 1494-1499, June 2015.
- [110] C. Boyd, R.-A. Pitaval, Ü. Parts and O. Tirkkonen, "Non-binary Classical Error-correcting Codes for Quantum Communication," IEEE ICC, 6 pp., June 2015.
- [111] F. Ahmed and O. Tirkkonen, "Self-Organized Physical Cell ID Assignment in Multi-operator Heterogeneous Networks," IEEE VTC–Spring, 5 pp., May 2015.
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