

8 REFERENCES

- [1] M. Wen, B. Zheng, K. J. Kim, M. Di Renzo, T. A. Tsiftsis, K.-C. Chen, and N. Al-Dhahir, "A survey on spatial modulation in emerging wireless systems: Research progresses and applications," *IEEE Journal on Selected Areas in Communications*, vol. 37, no. 9, pp. 1949–1972, 2019.
- [2] C.-M. Yu, S.-H. Hsieh, H.-W. Liang, C.-S. Lu, W.-H. Chung, S.-Y. Kuo, and S.-C. Pei, "Compressed sensing detector design for space shift keying in mimo systems," *IEEE Communications Letters*, vol. 16, no. 10, pp. 1556–1559, 2012.
- [3] L. Xiao, P. Yang, Y. Xiao, S. Fan, M. Di Renzo, W. Xiang, and S. Li, "Efficient compressive sensing detectors for generalized spatial modulation systems," *IEEE Transactions on Vehicular Technology*, vol. 66, no. 2, pp. 1284–1298, 2016.
- [4] C. Wang, P. Cheng, Z. Chen, J. A. Zhang, Y. Xiao, and L. Gui, "Near-ml low-complexity detection for generalized spatial modulation," *IEEE Communications Letters*, vol. 20, no. 3, pp. 618–621, 2016.
- [5] Z. Gao, L. Dai, Z. Wang, S. Chen, and L. Hanzo, "Compressive-sensing-based multiuser detector for the large-scale sm-mimo uplink," *IEEE Transactions on Vehicular Technology*, vol. 65, no. 10, pp. 8725–8730, 2015.
- [6] W. Liu, N. Wang, M. Jin, and H. Xu, "Denoising detection for the generalized spatial modulation system using sparse property," *IEEE Communications letters*, vol. 18, no. 1, pp. 22–25, 2013.
- [7] T. Wang, S. Liu, F. Yang, J. Wang, J. Song, and Z. Han, "Generalized spatial modulation-based multi-user and signal detection scheme for terrestrial return channel with noma," *IEEE Transactions on Broadcasting*, vol. 64, no. 2, pp. 211–219, 2017.
- [8] T. Wang, S. Liu, F. Yang, J. Wang, J. Song, and Z. Han, "Block-sparse compressive sensing based multi-user and signal detection for generalized spatial modulation in noma," in *2017 13th International Wireless Communications and Mobile Computing Conference (IWCMC)*. IEEE, 2017, pp. 1992–1997.
- [9] S. K. Sahoo and A. Makur, "Signal recovery from random measurements via extended orthogonal matching pursuit," *IEEE Transactions on Signal Processing*, vol. 63, no. 10, pp. 2572–2581, 2015.
- [10] J. Wang, S. Kwon, and B. Shim, "Generalized orthogonal matching pursuit,"

IEEE Transactions on signal processing, vol. 60, no. 12, pp. 6202–6216, 2012.

- [11] J. Fu, C. Hou, W. Xiang, L. Yan, and Y. Hou, “Generalised spatial modulation with multiple active transmit antennas,” in *2010 IEEE Globecom Workshops*. IEEE, 2010, pp. 839–844.
- [12] A. Younis, N. Serafimovski, R. Mesleh, and H. Haas, “Generalised spatial modulation,” in *2010 conference record of the forty fourth Asilomar conference on signals, systems and computers*. IEEE, 2010, pp. 1498–1502.
- [13] S. Sugiura, S. Chen, and L. Hanzo, “Coherent and differential space-time shift keying: A dispersion matrix approach,” *IEEE Transactions on Communications*, vol. 58, no. 11, pp. 3219–3230, 2010.
- [14] R. Mesleh, S. S. Ikki, and H. M. Aggoune, “Quadrature spatial modulation,” *IEEE Transactions on Vehicular Technology*, vol. 64, no. 6, pp. 2738–2742, 2014.
- [15] C.-C. Cheng, H. Sari, S. Sezginer, and Y. T. Su, “Enhanced spatial modulation with multiple signal constellations,” *IEEE Transactions on Communications*, vol. 63, no. 6, pp. 2237–2248, 2015.
- [16] E. Başar, U. Aygölü, E. Panayirci, and H. V. Poor, “Space-time block coded spatial modulation,” *IEEE transactions on communications*, vol. 59, no. 3, pp. 823–832, 2010.
- [17] P. Yang, M. Di Renzo, Y. Xiao, S. Li, and L. Hanzo, “Design guidelines for spatial modulation,” *IEEE Communications Surveys & Tutorials*, vol. 17, no. 1, pp. 6–26, 2014.
- [18] J. W. Kim, M. Irfan, M. A. Shayokh, and S. Y. Shin, “Selective non-orthogonal multiple access (noma) and spatial modulation (sm) for improved spectral efficiency,” in *2015 International Symposium on Intelligent Signal Processing and Communication Systems (ISPACS)*. IEEE, 2015, pp. 552–555.
- [19] Z. Hong, G. Li, J. Lin, Y. Xu, and X. Zhou, “Power allocation for downlink multiuser noma-based generalized spatial modulation,” in *2019 11th International Conference on Wireless Communications and Signal Processing (WCSP)*. IEEE, 2019, pp. 1–6.
- [20] Y. A. Chau and S.-H. Yu, “Space modulation on wireless fading channels,” in *IEEE 54th Vehicular Technology Conference. VTC Fall 2001. Proceedings (Cat. No. 01CH37211)*, vol. 3. IEEE, 2001, pp. 1668–1671.
- [21] R. Mesleh, H. Haas, C. W. Ahn, and S. Yun, “Spatial modulation-a new low complexity spectral efficiency enhancing technique,” in *2006 First International*

Conference on Communications and Networking in China. IEEE, 2006, pp. 1–5.

- [22] J. Jeganathan, A. Ghrayeb, and L. Szczecinski, “Generalized space shift keying modulation for mimo channels,” in *2008 IEEE 19th International Symposium on Personal, Indoor and Mobile Radio Communications*. IEEE, 2008, pp. 1–5.
- [23] M. Di Renzo, H. Haas, A. Ghrayeb, S. Sugiura, and L. Hanzo, “Spatial modulation for generalized mimo: Challenges, opportunities, and implementation,” *Proceedings of the IEEE*, vol. 102, no. 1, pp. 56–103, 2013.
- [24] K. Lee, “Doubly ordered sphere decoding for spatial modulation,” *IEEE Communications Letters*, vol. 19, no. 5, pp. 795–798, 2015.
- [25] N. Ishikawa, S. Sugiura, and L. Hanzo, “50 years of permutation, spatial and index modulation: From classic rf to visible light communications and data storage,” *IEEE Communications Surveys & Tutorials*, vol. 20, no. 3, pp. 1905–1938, 2018.
- [26] P. Yang, Y. Xiao, M. Xiao, and Z. Ma, “Noma-aided precoded spatial modulation for downlink mimo transmissions,” *IEEE Journal of Selected Topics in Signal Processing*, vol. 13, no. 3, pp. 729–738, 2019.
- [27] Z. Hong, G. Li, Y. Xu, and X. Zhou, “User grouping and power allocation for downlink noma-based quadrature spatial modulation,” *IEEE Access*, vol. 8, pp. 38 136–38 145, 2020.
- [28] V. Kumar, S. Gadhai, and R. Budhiraja, “Multi-antenna non orthogonal multiple access using block-based spatial modulation,” in *2019 IEEE 20th International Workshop on Signal Processing Advances in Wireless Communications (SPAWC)*. IEEE, 2019, pp. 1–5.
- [29] Z. Wang, J. Cao *et al.*, “Noma-based spatial modulation,” *IEEE access*, vol. 5, pp. 3790–3800, 2017.
- [30] Y. Liu, L.-L. Yang, and L. Hanzo, “Joint user-activity and data detection for grant-free spatial-modulated multi-carrier non-orthogonal multiple access,” *IEEE Transactions on Vehicular Technology*, vol. 69, no. 10, pp. 11 673–11 684, 2020.
- [31] R. Rajashekar, K. Hari, and L. Hanzo, “Reduced-complexity ml detection and capacity optimized training for spatial modulation systems,” *IEEE Transactions on Communications*, vol. 62, no. 1, pp. 112–125, 2013.
- [32] A. Garcia-Rodriguez and C. Masouros, “Low-complexity compressive sensing detection for spatial modulation in large-scale multiple access channels,” *IEEE Transactions on Communications*, vol. 63, no. 7, pp. 2565–2579, 2015.

- [33] C. Wei, H. Liu, Z. Zhang, J. Dang, and L. Wu, "Approximate message passing-based joint user activity and data detection for noma," *IEEE Communications Letters*, vol. 21, no. 3, pp. 640–643, 2016.
- [34] O. Musa, P. Jung, and N. Goertz, "Generalized approximate message passing for unlimited sampling of sparse signals," in *2018 IEEE Global Conference on Signal and Information Processing (GlobalSIP)*. IEEE, 2018, pp. 336–340
- [35] W. Wei, J. Min, and G. Qing, "A compressive sensing recovery algorithm based on sparse bayesian learning for block sparse signal," in *2014 International Symposium on Wireless Personal Multimedia Communications (WPMC)*. IEEE, 2014, pp. 547–551. 34
- [36] Y. Zhang, Q. Guo, Z. Wang, J. Xi, and N. Wu, "Block sparse bayesian learning based joint user activity detection and channel estimation for grant-free noma systems," *IEEE Transactions on Vehicular Technology*, vol. 67, no. 10, pp. 9631–9640, 2018.