

Two-Sided Linear Quaternionic Equations: History, Structure, and the Discriminant Space Method

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Abstract. We present a method for solving two-sided linear quaternionic equations by introducing the new concept of discriminant space. We provide necessary and sufficient conditions for the existence of solutions, alongside an efficient method to compute them. Furthermore, we extend these results to systems of general two-sided linear quaternionic equations and equations involving quaternionic conjugates. The talk is based on joint work with Yulu Chen, Bowen Liu, and Bin Wang.

About the speaker. Kaiming Zhao received his Ph.D. in Mathematics from the Chinese Academy of Sciences (CAS) in 1991 and was selected for the “Hundred Talents Program” of the Academy of Mathematics and Systems Science, CAS in 2000. His research interests lie in algebra. He has led multiple projects funded by the NSERC and served on the editorial boards of several mathematical journals. He is currently a tenured professor at Wilfrid Laurier University, Canada. He has published 157 innovative academic papers in highly influential mathematical journals, including Journal of the Institute of Mathematics of Jussieu, Advances in Mathematics, Proceedings of the London Mathematical Society, Transactions of the American Mathematical Society, Communications in Contemporary Mathematics, Selecta Mathematica, Proceedings of the Royal Society of Edinburgh, Documenta Mathematica, Journal of the London Mathematical Society, Mathematische Zeitschrift, Israel Journal of Mathematics, Mathematical Research Letters, Moscow Mathematical Journal, Journal of Algebra, and more. Many of these papers have become important references in Lie algebra, widely cited by authoritative institutions and algebraists worldwide. His work has received 2442 citations, with an h-index of 30 (according to MathSciNet).

REFERENCES

- [1] Y. Chen, B. Liu, B. Wang, and K. Zhao, *Two-sided Linear Quaternionic Equations*, J. Algebra and its Applications, <https://doi.org/10.1142/S0219498826400013>.

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