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P. Robert Kotiuga*, 8 Saint Mary's Street, 8 Saint Mary's Street, Boston, MA 02215. *An algebraic framework for near force-free magnetic fields and relaxation in plasmas.*

The Giroux correspondence reduces the topological characterization of near force-free magnetic fields to the classification of contact structures and open book decompositions [PRK16]. A knot's Alexander polynomial is an even order palindromic polynomial with integer coefficients; composite knots have reducible Alexander polynomials, while fibered knots have monic Alexander polynomials. We use analogies with algebraic number fields [M12] to explore the set of contact structures which characterize near force-free magnetic fields.

A by product is a framework for understanding magnetic relaxation in plasmas and magnetic reconnection as a descent through an energy landscape where critical points correspond to open book decompositions.

References

[PRK16] P. R. Kotiuga, *On the Topological Characterization of Near Force-Free Magnetic Fields and the Work of Late-onset Visually-impaired Topologists.* pp 215-234 of Discrete and Continuous Dynamical Systems, Series S, Vol. 9 No. 1 Feb 2016.

[M12] M. Morishitai, *Knots and Primes: An Introduction to Arithmetic Topology*, Universitext, Springer 2012.

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