UNIVERSITY of WISCONSIN
UW MILWAUKEE

Department of Mathematical Sciences

Master's Thesis Defense

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MS Graduate Student

Under the Supervision of Kevin McLeod

Thursday, May 6th 2021 @ 11:00am

Online via. Collaborate Ultra

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Exploring the Division Algorithm in Euclidean Domains with Exploding Dots

We will give an overview of the representation of place value and arithmetic known as Exploding Dots and use this idea to explore the division algorithm. It is well-known that the ring of integers, the ring of polynomials, and the ring of Gaussian integers are all examples of Euclidean domains and therefore possess a division algorithm. Exploding Dots beautifully illustrates how one can perform division in any base and how this naturally leads us to division of polynomials. We will show how this same idea of having a "base machine" can be used to perform division in the Gaussian integers.

Committee Members:

Profs. Kevin McLeod, Gabriella Pinter, Suzanne Boyd, Jeb Willenbring

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