

1121-81-252

Jon Yard* (jtyard@gmail.com). *Arithmetic aspects of topological phases.*

This talk presents joint work with several people exploring various arithmetic aspects of $2 + 1$ -dimensional topological phases. I will first show that abelian topological phases with boundary are classified by equivalence classes of integral quadratic forms, whereas the corresponding bulk topological phases are classified by a weaker invariant of quadratic forms known as the genus, characterized by equivalence over the p -adic integers \mathbb{Z}_p for all primes p . I will also discuss potential physical interpretations of an intermediate invariant of quadratic forms known as the spinor genus. Finally, I will show that the image of the braid group representation associated to a qubit encoded among Fibonacci anyons is S -arithmetic. (Received July 19, 2016)