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Travis William Morrison* (travis.morrison@uwaterloo.ca), IQC-QNC, University of Waterloo, 200 University Ave W, Waterloo, Ontario N2. *Local-global principles and diophantine definability.*

Diophantine definability and decidability are closely related. Because it is not known if Hilbert's tenth problem over \mathbb{Q} is undecidable, we are motivated to study which sets are diophantine over \mathbb{Q} , or more generally, over a global field. Koenigsmann proved that $\mathbb{Q} \setminus \mathbb{Z}$ is diophantine over \mathbb{Q} , and Park generalized this to number fields. In joint work with Eisentraeger, we proved that the complement of a ring of S-integers in a global function field is diophantine. In this talk, I will discuss how local-global principles and class field theory are used to produce these diophantine definitions. Additionally, I will discuss how to generalize these ideas to prove that the non-norms of some cyclic extensions are diophantine. (Received September 25, 2018)