1125-A0-18   **Lillian Pierce***, Duke University, Durham, NC 27708. *From Gauss to today: class numbers and p-torsion in class groups of number fields.*

Each number field (finite extension of the rationals) has a positive integer associated to it called the class number, defined to be the cardinality of the class group of the field. Class numbers are important objects that arise naturally in many contexts in number theory: for example, Gauss famously investigated class numbers of quadratic fields, in the context of classifying the representation of integers by binary quadratic forms. Today, many deep open questions remain about the structure of class groups and the growth and divisibility properties of class numbers as fields vary over an appropriate infinite family. This talk will focus on the size of the p-torsion subgroup of the class group: it is conjectured that for any number field and any rational prime p, the p-torsion part of the class group of the field should be very small, in a suitable sense, relative to the discriminant of the field. The talk will survey progress on this open problem, from Gauss to today. (Received May 23, 2016)