1154-11-1874 **Andrew R. Booker** and **Andrew V. Sutherland*** (drew@math.mit.edu). *Life, the universe, and everything.*

A 1992 conjecture of Heath-Brown states that every integer not congruent to 4 or 5 modulo 9 can be expressed as a sum of three cubes in infinitely many different ways. But finding even one representation of such an integer as a sum of three cubes can be very difficult, and there are several small integers for which no such representation is known, despite extensive searching. In this talk I will describe the computational methods we used to find new representations of some small integers as sums of three cubes, including the integer 42. (Received September 16, 2019)