1163-35-6 **Ryan Hynd*** (`rhynd@math.upenn.edu`), 209 South 33rd St., Philadelphia, PA 19104. *The Hamilton-Jacobi equation, past and present.*

Nearly two centuries ago, William Rowan Hamilton observed that the equations of motion in classical mechanics can be derived by finding stationary points of a certain integral. In addition, he identified an equation satisfied by the integral itself, which is now known as the Hamilton-Jacobi equation. These ideas were later expanded upon by scientists who grappled with the challenges of understanding how to regulate machines, control spacecrafts, and optimize the production of goods. In recent years, mathematicians have made tremendous progress in developing a theory of control which prominently features a Hamilton-Jacobi equation. We will discuss the highlights of this theory, some applications, and a few theoretical issues of interest today. (Received September 14, 2020)