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Johannes C. Familton* (jfamilton@bmcc.cuny.edu), Borough of Manhattan Community College, The City University of New York, 199 Chambers Street, New York, NY 10007. *The Joining of Quaternions with Grassmann algebras: William Kingdon Clifford.*

Most people who work with quaternions know the story of Hamilton's breakthrough on Broome bridge in Dublin, Ireland where he carved the famous formula $i^2 = j^2 = k^2 = ijk = -1$, but some may not know much about Grassmann (Hermann Günther Grassmann; April 15, 1809 – September 26, 1877) or Clifford (William Kingdon Clifford FRS; May 4, 1845 – March 3, 1879) and the history of their contributions to this subject.

Hamilton's approach was mainly connected to algebra, while Grassmann arrived at similar conclusions through geometry. Although Hamilton saw the adoption of quaternions in his lifetime, Grassmann was barely recognized during his. It wasn't until after he passed that other scientists and mathematicians began to recognize the depth of his work. One of these was Clifford. Although Clifford's life was relatively short due to tuberculosis his insight into how to connect Hamilton's algebra to Grassmann's geometry has endured.

In this talk Dr. Familton will give a brief discussion of Grassmann algebras, their history, and how Clifford connected the best of Grassmann's and Hamilton's work. (Received August 22, 2016)