

On Quaternions And Octonions

On October 16th, 1843, while walking with his wife to a meeting of the Royal Society of Dublin, Hamilton discovered a 4-dimensional division algebra called the quaternions: The quaternions are members of a noncommutative division algebra first invented by William Rowan Hamilton. Mar 14, 2026 · Quaternions were invented to extend arithmetic into higher dimensions, and today they're the standard tool for representing 3D rotations in video games, aerospace systems, and robotics. If 1D numbers are the reals, and 2D numbers are the complex numbers, then 4D numbers are quaternions, and that's all there is. (Frobenius) (Octonions are not associative.) It turns out that extending complex numbers to quaternions allows rotations to extend to three dimensions in a very convenient way. It permits us to easily construct a formula

for rotation about an ... On this page we will introduce quaternions as an extension of complex numbers with two additional imaginary dimensions, however there are other ways to think about quaternions and other notations ... Quaternions provide a definition of the quotient of two vectors in a three-dimensional space. [3][4] Quaternions are generally represented in the form where the coefficients a, b, c, d are real numbers, ...

[Maths - Quaternions - Martin](#)

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What Is a Quaternion? The

Math Behind 3D Rotation

Introducing The

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of Mathematics

Quaternion - Wikipedia

Lecture 7. Quaternions

MATH431: Quaternions - UMD

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