



Adding Depth

The substantial use of digital technology in films has landed mathematics a leading role (mostly uncredited) in many recent hits. That role is now expanding as directors and animators are beginning a new era of movies, in which mathematics helps introduce another dimension to the two-dimensional screen. The images you see are created with geometry, linear algebra, partial differential equations, and vector analysis. Animators' algorithms employ ideas from these and other areas to depict the reflection and refraction of light and create life-like images of hair, water, and skin—even when it's blue.



Image courtesy of Twentieth Century Fox.



The **Mathematical Moments** program promotes appreciation and understanding of the role mathematics plays in science, nature, technology, and human culture.

www.ams.org/mathmoments