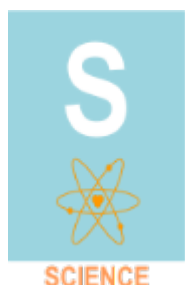


# STEM/STEAM & The Movie SCIENCE



SCIENCE	FILM(S) REFERENCED	CONCEPTS
<a href="#">The science behind 'Oppenheimer'</a>	Oppenheimer	Physics Quantum mechanics
<a href="#">Super Hero Physics</a> THE "MARVEL"-OUS NATURE OF SCIENCE: Using superhero movies to teach methods and values in science (Science Teacher July 2019) <a href="#">Movie sciences &amp; instructional prompts</a>	References to graphic novels rather than films Iron Man, Captain America, Thor, Black Panther, Ant-Man, Avengers and Guardians of the Galaxy.	Many  nature of science,
<a href="#">The Science (and the Scientists) Behind "The Antman"</a>	Antman & The Wasp Annihilation Jurassic World Thor:Ragnorok Black Panter Iron Man	molecular density molecular misequilibrium quantum decoherence organic atom reduction
<a href="#">Jurassic World: Skimps on Dinosaur Science</a>	Jurassic World	
<a href="#">The Science Behind Pixar</a> (exhibit, lessons)	All Pixar films	<a href="#">Many</a>

<a href="#"><u>Science of 3D Movies:</u></a> How do images on a flat screen pop out?		depth perception; stereoscopic vision; polarized light
Visible invisibility: <a href="#"><u>the science of cinematography</u></a>	Saving Pvt Ryan Citizen Kane Vertigo Pulp Fiction Ben Hur Lawrence of Arabia A Space Odyssey Tangerine The Hateful Eight	exposure time chemicals resolution
<a href="#"><u>The Future Science of Star Wars</u></a>	Star Wars	
<a href="#"><u>The Science in “The Martian”</u></a>	The Martian	ion engines, orbital dynamics, interplanetary travel, chemistry, solar energy
<a href="#"><u>The Physics of “Back To The Future”</u></a>	Back To The Future	special relativity photons general relativity
<a href="#"><u>How Science Helps Create Realistic Explosions in Movies</u></a>	Avatar, Iron Man 3, Super 8, Man of Steel	wavelet turbulence
<a href="#"><u>Physics Journal Recommends Teachers Use Interstellar</u></a>	Interstellar; Star Trek; Stargate	Wormholes; black holes

<a href="#"><u>Stunts Makes A Believer of Physics Expert</u></a>	Fast & Furious 7	speed; terminal velocity; momentum
<a href="#"><u>Neuroscientist Takes A Scientific Look at Art of Filmmaking</u></a>	Airplane, Chicago, Moulin Rouge	Brain Science
<a href="#"><u>The Physics of Spiderman's Webs</u></a>	Spiderman	downward gravitational force; upward force; momentum; tension; velocity; kinematic equations;
<a href="#"><u>Science Goes To The Movies</u></a>	Various	Varies
<a href="#"><u>Great &amp; Realistic Physics Movies</u></a> related: <a href="#"><u>Good &amp; Bad Examples from Movies</u></a> (video)	Gravity, Apollo 13, October Sky, The Abyss, IQ, Infinity, 2001: A Space Odyssey	

<a href="#">Science of Hollywood Stunts</a> (video)	The Firm; A Time to Kill; Spiderman; Mission Impossible;	solid, liquids, gas, steam, expansion, chemical reactions, metal, hydrocarbon, fluids, carbon, refraction, atoms, gravity, compression, pulleys, force, direction, load, friction, vectors, pressure, electrical circuits, magnet
<a href="#">Physics in Wall-E</a>	Wall E	Applied Physics, Gravity
<a href="#">Interstellar Film Technology &amp; Black Holes</a> <a href="#">The Surprising Science Behind Interstellar</a> <a href="#">Christopher Nolan/Kip Thorne Discuss Physics of Interstellar</a>	Interstellar	Black Holes, Worm Holes, Caustics, Relativity
<a href="#">Movie Magic Conjured by Science</a>	Toy Story, Harry Potter, Hellboy, Quantum of Solace, Chronicles of Narnia, Tron	Fluid Dynamics

<a href="#">Science of the Movies in 3D</a> (Video)	Terminator 2; Metalstorm, Journey to The Center of the Earth	Stereo, Depth, Polarization, Light Waves
<a href="#">How Movies Makers Use Science to Make Magic</a>	The Incredibles, Jurassic Park, Benjamin Button, Avengers, Pirates of the Caribbean, My Week With Marilyn, The Ten Commandments, Avatar	Visual effects, CG, third-degree polynomials, higher frame rates, 3D, linear perspective, aerial perspective, composition,