

**Department of Structural Engineering
University of California, San Diego
SE 290 Seminar**



Eduardo Velazquez
Manager, Multibody Dynamics
SpaceX

"SpaceX Overview and Q&A"

Monday, November 7, 2016
1:00 pm - 1:50 pm, Center Hall, Room 212

Abstract

SpaceX designs, manufactures and launches advanced rockets and spacecraft. It was founded in 2002 to revolutionize space technology, with the ultimate goal of enabling people to live on other planets. It is the only private company ever to return a spacecraft from low-Earth orbit, which it first accomplished in December 2010. The company made history again in May 2012 when its Dragon spacecraft attached to the International Space Station, exchanged cargo payloads, and returned safely to Earth — a technically challenging feat previously accomplished only by governments. Since then Dragon has delivered cargo to and from the space station multiple times, providing regular cargo resupply missions for NASA. In 2016, NASA awarded SpaceX a second version of that contract that will cover a minimum of 6 additional flights from 2019 onward. In the near future, SpaceX will carry crew as part of NASA's Commercial Crew Program as well. Currently under development is the Falcon Heavy, which will be the world's most powerful rocket. All the while, SpaceX continues to work toward one of its key goals—developing reusable rockets, a feat that will transform space exploration by delivering highly reliable vehicles at radically reduced costs. Longer term plans include sending a Dragon capsule to Mars on every opportunity after 2018, and to create an Interplanetary Transport System to enable a Mars settlement. This talk will give an overview of the different SpaceX

vehicles and facilities, and give insight into the associated challenges experienced through their testing and development.

Biography

Eduardo Velazquez is the Multibody Dynamics Manager at SpaceX. His group is responsible for the analysis of major kinematic structures in the F9 launch vehicle and the Dragon capsule, as well as Astronaut loads during all phases of flight. Eduardo has been working at SpaceX since 2011 when he deferred his PhD work at UCSD. He has worked on the design, analysis, and testing of flight proven hardware including Payload Fairing, Deployable F9 Landing Legs, and Deployable Dragon Solar Array. He holds a Masters of Structural Engineering from UCSD as well as a bachelor degree from SDSU. He has served in several positions for local SAMPE and AIAA chapters.

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*Sponsored by Professor Chia-Ming Uang
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