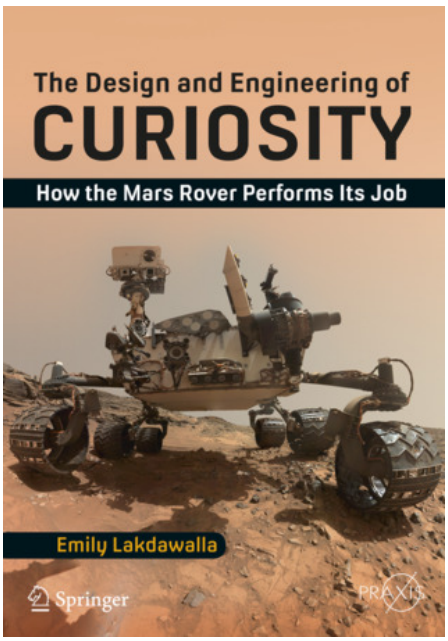

The Design and Engineering of Curiosity: How the Mars Rover Performs Its Job

Emily Lakdawalla

The Design and Engineering of Curiosity: How the Mars Rover Performs Its Job

Emily Lakdawalla

The Design and Engineering of Curiosity: How the Mars Rover Performs Its Job Emily Lakdawalla This book describes the most complex machine ever sent to another planet: Curiosity. It is a one-ton robot with two brains, seventeen cameras, six wheels, nuclear power, and a laser beam on its head. No one human understands how all of its systems and instruments work. This essential reference to the Curiosity mission explains the engineering behind every system on the rover, from its rocket-powered jetpack to its radioisotope thermoelectric generator to its fiendishly complex sample handling system. Its lavishly illustrated text explains how all the instruments work -- its cameras, spectrometers, sample-cooking oven, and weather station -- and describes the instruments' abilities and limitations. It tells you how the systems have functioned on Mars, and how scientists and engineers have worked around problems developed on a faraway planet: holey wheels and broken focus lasers. And it explains the grueling mission operations schedule that keeps the rover working day in and day out.

The Design and Engineering of Curiosity: How the Mars Rover Performs Its Job Details

Date	:	Published March 5th 2018 by Springer
ISBN	:	9783319681443
Author	:	Emily Lakdawalla
Format	:	Paperback 292 pages
Genre	:	Science, Nonfiction, Technology, Space

From Reader Review The Design and Engineering of Curiosity: How the Mars Rover Performs Its Job for online ebook

Paul Klinger says

A great overview of all the (many!) systems that make up Curiosity, their design, history, and quirks. No fluff, just as many details as can be fit into a reasonably sized book; synthesising all the available public material & private interviews with many of the engineers and scientists involved in the design of the rover and its experiments.

Most astonishing for me is that the book is extremely readable. I didn't expect to read it from cover to cover, but that's exactly what I did, within two days. It was hard to put down!

Strongly recommended for anyone with even a passing interest in space exploration or big science/engineering projects in general (the stories about how the team worked around various issues that cropped up after landing are particularly fascinating).

I'm looking forward to the sequel; after learning about all the instruments I can't wait to find out what they can tell us about Mars.

Michael Busch says

The Curiosity rover, NASA's Mars Science Laboratory mission, is an incredibly complex robotic geochemist that has been studying Mars since landing in 2012. Thousands of people have worked on the project over the last 13+ years, building and testing 10 different science instruments and integrating them with the rover's computers, its nuclear power supply, communications system, and everything else needed for the rover to work.

Emily Lakdawalla has been observing the Curiosity project and interviewing members of its science & engineering teams from nearly the beginning. Here she has distilled her reporting and hundreds of disparate documents about Curiosity into a comprehensive and accessible overview of everything about the rover. Anyone who isn't familiar with the rover already should be able to learn anything they want to know from this book, and even people who have worked with Curiosity for years have learned things from it.

My only disappointment with the book is that some of the pictures in the printed version don't have as much contrast as when they appear on a screen in the electronic version. This makes the finer details, such as the incredible precision of the sampling points of Curiosity's rock-vaporizing laser ChemCam, harder to appreciate.

I expect that many readers of the book will be left wanting to know more about what Curiosity has done on Mars, as well as how it does it. For that, Emily is working on a sequel. I look forward to reading it too.

Michael Lawson says

This book was quite good! It was very thorough, and I am looking forward to her second book

---

Luz Maria says

This book gives us a great overview of an engineering feat done by thousand of people over decades. The language it uses is technical enough to keep me engage and at the same time it narrates anecdotes and stories of the team give me an insight of the amazing work and challenges they had.

Gene says

Well written and full of information. Almost more than you might want to know, but not more than you should know. Not terribly technical.

Rajendra Dave says

Amazing engineering and operation details related to this very complex spacecraft. It not only documents its achievements, but also the anomalies and failures sustained during the mission, including the management ones. In addition to the meticulousness of the author, it also speaks volumes about open culture of NASA/JPL. One wishes every space agency has that kind of openness.

While the book cannot be faulted on its content, its style does not endear it to a lay person. It is too dry and the format is too straight-jacketed, especially for the description of subsystems and scientific instruments.

In summary, a must read for anyone interested and familiar with space technology and science

---