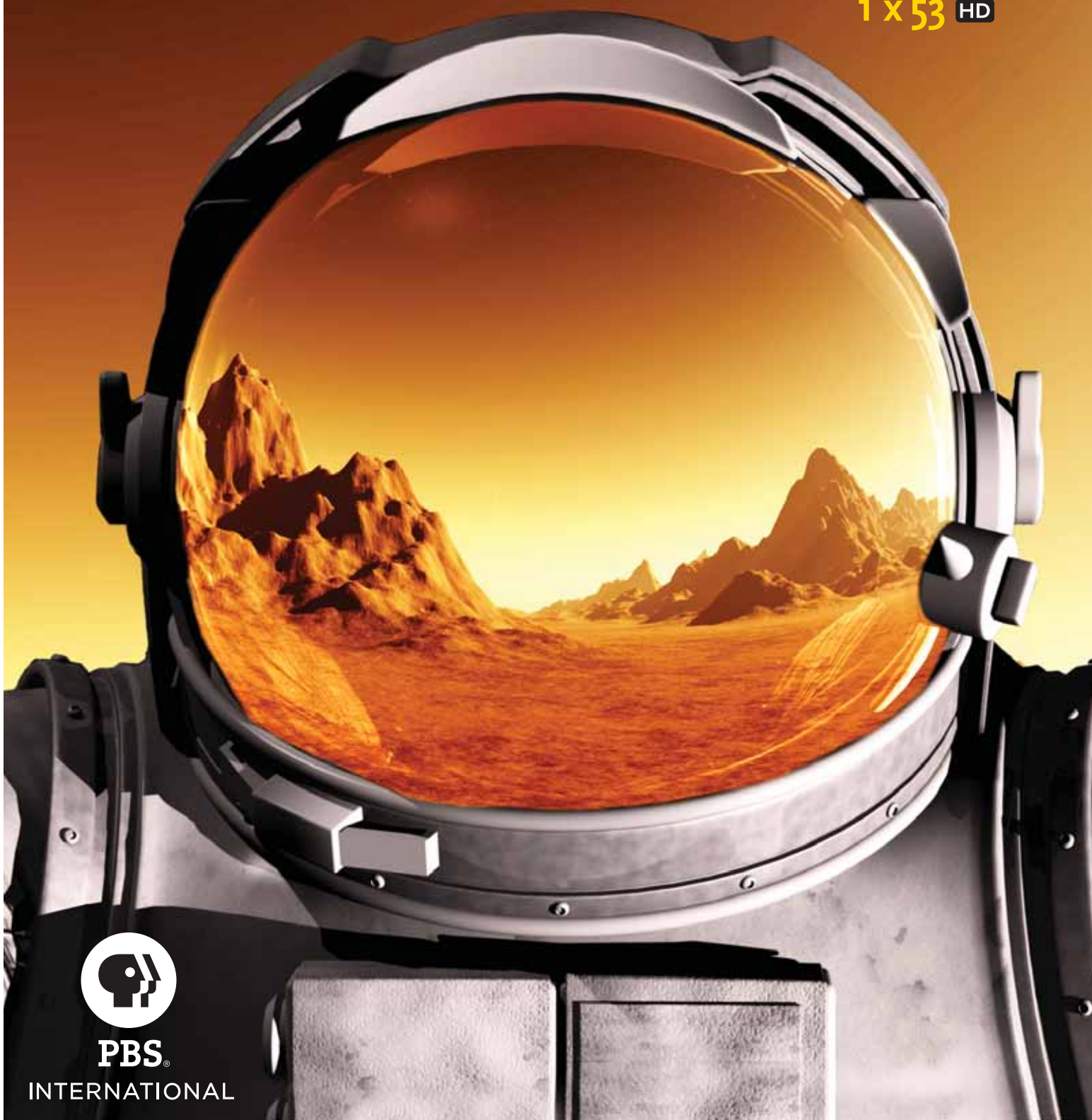


GREAT QUESTIONS IN SCIENCE

# Can We Make it to Mars?

1 X 53 HD



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CONTACT

Tom Koch, Vice President  
 PBS International  
 10 Guest Street  
 Boston, MA 02135 USA

TEL: +1-617-208-0735  
 FAX: +1-617-208-0783

jkoch@pbs.org  
 pbsinternational.org

Can humans survive a trip to Mars and back that could take two to three years? *NOVA scienceNOW* examines all of the perils and dilemmas of this journey—as well as the ingenuity being used to design innovative new materials for such an undertaking.

## Space Dangers

A trip to Mars and back could take two to three years. Can humans survive the journey, fraught with deadly meteoroids, bone and muscle wasting, and perilous levels of radiation? Scientists are developing new ways to keep astronauts alive, using novel meteoroid-proof materials, artificial gravity, and exercise. But will they be enough?

## Space Suits

Today's space suits are mini spaceships, cumbersome oxygen-filled balloons that provide life-saving air pressure, but which are notoriously difficult to move and work in. Dava Newman at MIT wants to design a space suit for future Mars explorers that's more Captain Kirk than Neil Armstrong—form-fitting and mobile. But protecting our cells from the vacuum of space is a lot harder than you'd think.

## Space Food

Would you want to eat a three-year-old meal? If you're returning from Mars, you might have to. At the space food lab at Johnson Space Center, chefs are devising new ways of cooking up dishes that will taste as fresh and healthy on the last day of the trip as they did on the first.

## Profile—Vandi Verma

Vandi Verma is a wanderer. Born and raised partly in India, she moved around a lot thanks to her father's air force career. Always motivated to explore new environments and cultures, there was also one constant—her fascination with flying and outer space. Today Verma is part of the team that drives the Mars rovers, and her unique combination of daredevil thrill-seeking and rigorous preparedness make her just right for the job.

## Plasma Rockets

What if astronauts could take an express voyage to Mars—one that would last not two and a half years, but just a few weeks? A new rocket called VASIMR, powered by a million-degree plasma instead of traditional chemicals, could be the answer NASA is looking for—if they could keep the super-hot engine from melting under its own heat.

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CREDITS

*Executive producer:* Samuel Fine  
*Executive editor:* Neil deGrasse Tyson  
*Senior series producer:* Vincent Liota  
*Managing director:* Alan Ritsko  
*Senior Executive producer:* Paula S. Apsell

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