



## Exploring space from our backyard

By creating computer models, we can explore the cosmos from our blue marble and uncover some of its mysteries.

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Humans have always possessed an inherent wonder about the Universe and hungered to understand its mysteries. However, bound by technology and the laws of physics, we have only been able to physically explore a minuscule piece of the vast cosmos.

Astronomers have been looking for innovative ways to explore space since they first glanced at the heavens. The challenge has sparked clever and resourceful techniques to study what is out there.

One way of doing this is to create computer models that simulate the

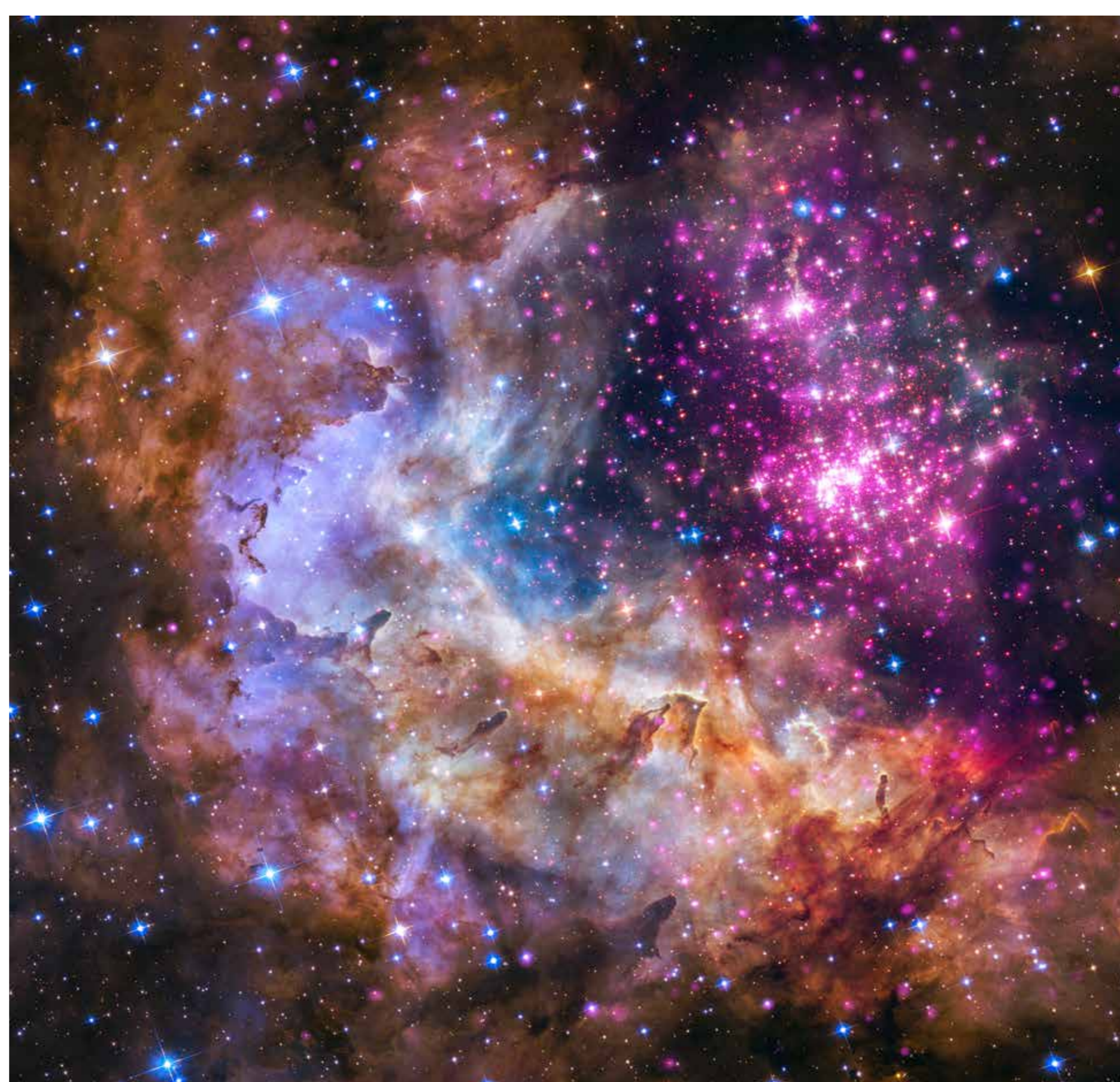
environments and objects we are studying. Physical laws are translated into computer code to create virtual objects on which we can perform experiments.

“An immense amount of information is contained within the electromagnetic (EM) radiation that we receive from astronomical sources. The trick is to untangle this information to learn more about the objects that the EM radiation originates from,” says Dr Andri Prozesky.

Researchers at Unisa have created computer models to study atomic hydrogen masers - colossal natural lasers formed by clouds of atoms in space.

Theoretical investigations into atomic hydrogen masers have been scant and this work provides new insights into their nature, as well as the interaction between matter and light in astronomical clouds more generally.

“By studying the smallest atoms in the vastness of space, we push the limits of human understanding about our natural world. We might never be able to journey beyond our cosmic backyard physically, but we can explore the Universe using science.”



By using computer models, we can study what happens in space. Credit: NASA



# THE ART OF RESEARCH