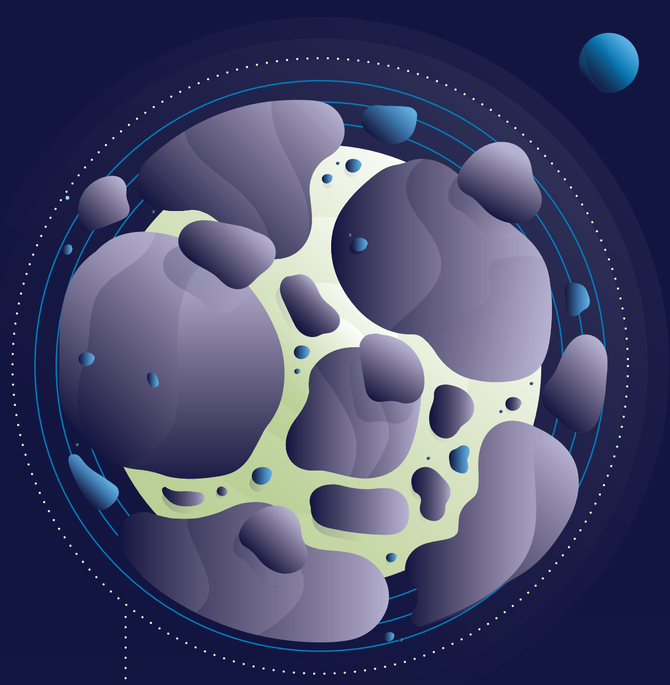
Profound Questions, New Answers

The next generation Very Large Array

The next generation Very Large Array (ngVLA) will supercharge our research—both through its unique individual capabilities and through synergistically bolstering the power of current and future next-generation telescopes, taking our understanding of the universe to new heights.

The ngVLA has the potential to uncover answers in key cases, including...



CAPTURING THE FORMATION OF ROCKY PLANETS

By observing hundreds of star systems in the process of forming new worlds, ngVLA will capture the dynamics of planetary formation and evolution.

Observing more distant and fainter neutron star mergers.

Seeing mergers in more detail, allowing us to study them more thoroughly.

Tracking black holes, of all masses, in motion in our galaxy

PROBING THE EVENTS THAT MAKE THE UNIVERSE SHAKE

By observing the telltale glow of merging neutron stars, astronomers will be able to track the evolution of the surrounding environment and the role gravitational waves and other factors play.

Study the interstellar medium at the heart of the Milky Way

Testing the limits of general relativity

Reveal stellar dynamics and stellar evolution

SEEING PULSARS AT THE CENTER OF OUR GALAXY

Pulsars can be used as cosmic clocks to measure space and time near our supermassive black hole.

Deeper exploration to find dozens of molecules intrinsic to star formation and potentially important for life

Studying in detail the chemistry of dense clouds surrounding baby stars

A better understanding of the potential habitability of other worlds

The ngVLA will reveal the amount and distribution of star-forming material within a galaxy, and how that material is replenished as a galaxy ages.

DISCOVERING THE CONDITIONS THAT GIVE RISE TO LIFE IN OTHER STAR SYSTEMS

The intersection of biology, chemistry, and astronomy

More information as to

- When, how, and where life may form
- The kinds of star systems where life has a better chance to emerge

REVEALING THE HISTORY OF GALAXIES

This will give us a more complete picture of galactic evolution. We will see how quickly galaxies turn gas into stars and how much material has already become stars.

With the ngVLA as part of our astronomical observatory ecosystem, we'll learn about these cosmic mysteries—and so much more. What will you look for?

Keep exploring with us. Learn more: ngvla.nrao.edu

NSF · AUI · National Radio Astronomy Observatory (NRAO) · ngvla