

A “Smashing” Polar-ring Galaxy



Image Credit: Gemini Observatory/AURA

Gemini Observatory Legacy Image



The Gemini Observatory is operated by the Association of Universities for Research in Astronomy, Inc., under a cooperative agreement with the National Science Foundation on behalf of the Gemini Partnership.



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This Gemini North telescope image captures the “bloody” aftermath of one galaxy piercing the heart of another. All the action appears in a single frame, with the stunning polar-ring galaxy NGC 660 as the focus of attention.

NGC 660 spans some 40,000 light years across and lies about 40 million light years distant in the direction of the constellation of Pisces. It has an unusually high gas content and resolves into hundreds of objects, a considerable fraction of which are blue and red supergiant stars. The ring’s youngest detected stars formed only about seven million years ago, indicating a long and ongoing process of formation.

As NGC 660’s ring is not truly polar, but inclined $\sim 45^\circ$ from the plane of the disk, it most likely formed by a previous interaction with a gas-rich galaxy about a billion years ago. That event would have stripped the interloper of its gas, directed it into NGC 660’s core, and triggered a furious burst of star formation. When the resulting short-lived, massive stars exploded shortly thereafter as supernovae, they would have generated shock waves that triggered more star formation, and so on, even to this day.

Gemini Observatory Facts

PRIMARY MIRRORS:

Diameter: 8.1 meters; 26.57 feet; 318.84 inches

Mass: 22.22 metric tonnes; 24.5 U.S. tons

Composition: Corning Ultra-Low Expansion (ULE) Glass

Surface Accuracy: 15.6 nm RMS (between 1/1000 - 1/10,000 thickness of human hair)

TELESCOPE STRUCTURES:

Height: 21.7 meters; 71.2 feet; 7 stories (from “Observing Floor”)

Weight: 380 metric tonnes; 419 U.S. tons

Optomechanical Design: Cassegrain ; Alt-azimuth

DOMES:

Height: 46 meters; 151 feet; 15 stories (from ground)

Weight: 780 metric tonnes; 860 U.S. tons (moving mass)

Rotation: 360 degrees in 2 minutes

Thermal Vents: 10 meters; 32.8 feet (width – fully open)

GEOGRAPHICAL DATA:

Elevation: Gemini North: 4,214 meters; 13,824 feet

Gemini South: 2,737 meters; 8,980 feet

Location: Gemini North: 19°49.4’N; 155°28.1’W

Gemini South: 30°14.5’S; 70°44.8’W

To see this and many other images, please visit:
<http://www.gemini.edu/legacyph>

