This is the Crab Nebula,

located in the constellation Taurus,

6,500 light-years away.

The Crab Nebula is a supernova remnant.

A cosmic structure resulting from the explosion of a star.

A vast, expanding cloud of gas and dust

surrounds one of the densest objects

in the universe: a neutron star.

The Crab Nebula is made up of

many components,

including ionized sulfur, seen here in red-orange,

dust in yellow-green,

and synchrotron emission in a milky white.

In the center of it

all is the Crab's pulsar,

a rapidly rotating neutron star.

The pulsar has an incredibly strong

magnetic field and rotates very fast.

It produces a wind of energetic particles

that we call a Pulsar Wind Nebula.

These thin, bright lines

trace the shape of the magnetic field around the pulsar,

which give the nebula its form.

Fast-moving particles

spiral around the strong magnetic field lines

and produce a type of light called synchrotron emission,

appearing here as smoke-like material around the Crab's interior.

The outer parts of the remnant show

Remains of the exploded star blown out into interstellar space.

This bright, hot material

was ejected at very high speeds

and has fractured into intricate filaments and tendrils

as it was pushed outward

by the pulsar wind nebula.

Here and here,

the nebula appears to narrow.

This abrupt slimming

may be caused by the confinement

of the pulsar wind’s expansion

by a belt of dense gas.

With Webb’s infrared sensitivity,

and data from past telescope observations,

astronomers are gaining a comprehensive understanding

of this region, and its distinct and captivating complexities.