Exploring the Most Energetic Phenomena in the Universe: Radio Observations of Supernova and Gamma Ray Bursts

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Supernova and Gamma Ray What?

They certainly sound cool, but what exactly are supernovae? And gamma rays?

A supernova is what happens when a star explodes. This stellar outburst is extremely luminous and causes a burst of radiation that often briefly outshines an entire galaxy. During this short interval a supernova can radiate as much energy as our sun is expected to emit over its entire lifespan. The explosion expels most of a stars material at a velocity 10% of the speed of light, driving a shock wave into the surrounding interstellar medium. This shock wave creates an expanding shell of gas and dust called a supernova remnant. Nebula like the Cat's Eye Nebula (above) are the remnants of a stellar explosion. Gamma rays are the most energetic form of electromagnetic radiation that travels across the universe. They are created by events such as supernova explosions, destruction of positrons, and the creation of black holes. Gamma ray bursts from these stellar events can last from ten milliseconds to several minutes, although a typical burst lasts 20 to 40 seconds. The initial burst is followed by a longer-lived afterglow emitted at longer wavelengths.

Ashley Zauderer, Agnes Scott graduate of 2002, returns to explain these aspects of her research as well as other extremely energetic phenomena such as tidal disruption events.

A planetarium show and viewing with the observatory telescopes (weather permitting) will follow the talk. Doors open at 7:30pm, lecture begins at 8pm