

# Supernova,

## one of the most powerful cosmic event

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### Abstract

A supernova is one of the most gigantic explosions in the universe. It can sometimes be observed even from Earth with the naked eye and it is outshining often its host galaxy. Some historical supernovae and their observations led to important discoveries, for example Tycho Brahe concluded that the 'new star' he observed was further away from the Earth than the Moon. He initiated the collapse of the geocentric system. The explosions can be classified into different types, a star which is massive enough explodes in a supernova type II and a star in a binary system can accrete mass from its partner star and explodes then in a supernova type I.

Those supernovae can be observed with our telescopes and explored with the photographs that are taken. With the help of astrophotography light curves can be created, the apparent and absolute brightness can be measured and we can tell which type we have in front of us.

At the observatory Max Valier in Oberglumbrunn stands a Cassegrain- mirror telescope. In clear nights good for observing, the glance through the ocular can explore the universe until the border of the visible universe. If there are no clouds or full moon in the night sky nice photos can be taken. For that a star has to be focused, the telescope has to be slewed to the galaxy in which the supernova lies, the exposure time has to be set and then some shots are taken. Those are necessary to produce the final image, which is a composition of every single photo. This final process takes some time and is done at home on the computer.

With the final image (e.g. one of our supernovae: 2009jf), the magnitude of the supernova at the time the photo was taken can be extracted. Light curves of the supernova over a period of time can be created. They allow to distinguish between the different types of supernovae. To check the assumption that the supernova is a certain type, the absolute magnitude can be calculated. Further calculations can be made to get more information about such a complex scenario. With photos of galaxy clusters a new supernova could be discovered, but for that a great deal of luck is needed.

Fortunately those star explosions occurred a long time ago, they are necessary for producing the heavy elements we are made of and they can trigger the creation of new stars and maybe planets.

## List of figures

Title: supernova 2009jf

Figure 1: Supernova remnant Crab Nebula

Figure 2: Light curves of several supernova types

Figure 3: Evolution of a supernova

Figure 4: 2009dd in NGC4088

Figure 5: 2009gf in NGC5525

Figure 6: 2009kp in NGC6246

Figure 7: 2009hs in NGC6521

Figure 8: 2009hy in NGC7244

Figure 9: 2009ga in NGC7678

Figure 10: 2009he in PGC57934

Figure 11: 2009ia in PGC60284

Figure 12: telescope ,Max Valier‘

Figure 13: at work

Figure 14: Supernova 2009jf in NGC7479

Figure 15: Light curve 2009jf

Figure 16: Light curve with own measured data