# Nova Delphini 2013: A Backyard Analysis of a Classical Nova

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On August 14, 2013, Nova Delphini was discovered by Koichi Itagaki. This nova erupted to a maximum brightness of magnitude 4.4 by August 16. The extraordinary brightness of this event allowed many amateur astronomers to study it. The amount and quality of spectroscopic data gathered is unprecedented, as over 700 individual spectra have been collected so far in the ARAS database. A nova is a class of variable star that undergoes a cataclysmic eruption, which can be observed through a sudden increase in brightness that declines over a series of months or years. At the center of a nova is an accreting white dwarf star which is collecting hydrogen from its surroundings. The accreting mass causes a nuclear reaction on the surface of the white dwarf and as the pressure increases the reaction becomes super-critical and a thermonuclear runaway is ignited causing the brightness increase as well as triggering the ejection of a shell of material from the star. The stages of a classical nova outburst are outlined along with techniques available to amateur astronomers for study of these phenomena. The researcher’s equipment and software setup are detailed. Results obtained using a low resolution grating, Schmidt-Cassegrain telescope and CCD camera that were acquired while Nova Delphini was in the “fireball stage” and subsequent “iron curtain phase” are compared and discussed. Results obtained using a high resolution spectroscope; Schmidt-Cassegrain telescope and CCD camera that were acquired during the “lifting of the iron curtain phase” are also presented.

**Awards Won:**
Fourth Award of $500