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Supernovae from the Dark Energy Survey[1]

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The nature of dark energy is one of the greatest unsolved problems in physics today. Its existence was inferred from observations of exploding stars known as Type Ia supernovae (SNe Ia). These SNe Ia are standardizable candles that are excellent cosmological tools for probing dark energy through the distance-redshift relation. The Dark Energy Survey (DES) Supernova Program is repeatedly observing 30 square degrees within the full 5000-square-degree DES footprint and has discovered thousands of SNe Ia, in addition to many other types of SNe. DES has recently completed Year 3 of observations, with at least two more years still to go. In this talk, I will highlight the papers that have been published by the DES SN Program as well the ongoing analyses and projects within the group. I will introduce frameworks being developed for cosmological inference using Bayesian hierarchical regression models and discuss the steps needed for this. These include the transient detection pipeline, photometric calibration, host galaxy identification, follow-up spectroscopy of SNe and host galaxies, and SN photometric classification. I will also discuss DES discoveries of several superluminous SNe.

[1]On behalf of the Dark Energy Survey collaboration