

Space Science Seminar

Tuesday, 2014 March 11 10:30am

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Observations of the Crab Nebula and its Pulsar: New Results

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We have taken a number of observations with a variety of observatories of the Crab Nebula and its pulsar. The talk is being written as I formulate this abstract so I cannot promise that the topics that I list here will be included in the actual presentation which I shall probably finish a few minutes before the seminar begins. I currently plan to highlight the deepest Chandra image of the Nebula and (briefly) discuss some (possible) implications of the data - the first direct evidence for Rayleigh-Taylor instabilities in the termination shock of the relativistic wind that initiates the synchrotron nebula. Changing gears, I will present the results of our Radio observations with the Westerbork Radio Telescope designed to measure the radio polarization of the pulsar as a function of pulse phase. Perhaps surprisingly (as the Crab pulsar is one of the most well-studied astronomical objects) these are the most detailed such measurements ever performed with pulse phase resolution more than an order of magnitude than previous attempts. The results are quite interesting and are not successfully modeled by any of the current pulsar emission models. Other potential topics may include our recently published study of the X-ray and optical emission from the wisps north-west of the pulsar and movies of the interesting behavior of the southern jet.

<http://solarscience.msfc.nasa.gov/SpaceScienceSeminars.html>