

## Technical Page

Proposal Type: Regular  
 General Category: Pulsars  
 Observation Category:  
 Total Time Requested: 2.75 Hours  
 Minimum Useful Time: 2.50 Hours

**Proposal Title:** Pulsar wind nebula HESS J1943+213 and the case of the missing Supernova Remnants

**ABSTRACT:**

HESS J1943+213 is very high energy gamma-ray point source close to the Galactic plan, found in 2011, and originally classified as an extreme BL Lacertae blazar. We imaged HESS J1943+21 using the European VLBI Network at 1.6 GHz, and found prominent extended emission around it that completely rules out a BL Lac object. Furthermore, in HI spectral line data we found a shell-like feature with the radio/TeV point source near its center. This we interpret as a  $10^5$ -yr old supernova remnant (SNR) with a Pulsar Wind Nebula, powered by a central young pulsar. We appear to be looking at one of the oldest types of SNRs known, invisible except through its HI line emission. This may thus help to solve the long-standing problem of the "missing" Galactic SNRs. We here propose to unambiguously identify this structure as a supernova remnant, by detecting the pulsar that must power the pulsar wind nebula.

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### Remote Observing Request

- Observer will travel to AO
- Remote Observing
- In Absentia (instructions to operator)

### Instrument Setup

L-wide                      S-low

### Atmospheric Observation Instruments:

**Special Equipment or setup:** none

### RFI Considerations

## **Frequency Ranges Planned**

1100-1700

This proposal requires Iridium RFI protection at 1612 MHz between 10pm and 6am EST.

This proposal requires coordination with Punta Salinas radar within the band 1222-1381 MHz..

This proposal requires coordination with GPS L3 at 1381 MHz.