# Wow! Signal Residual Analysis

*Independent check using published 2024–2025 archival data and local verification*

## Key Data Points

• Peak flux density revised to ≥256 ± 63 Jy (Arecibo Wow! II, 2025).

• Frequency measured at 1420.726 ± 0.005 MHz.

• Location refined to two tighter fields near RA 19h25m02s or 19h27m55s, Dec –26°57′.

• Bandwidth ≤10 kHz; duration matched the 72-second beam transit.

• Small cold HI clouds in the same region produce similar narrowband signals near 1420 MHz.

• A transient source (magnetar flare or soft gamma repeater) can raise cloud brightness by a factor of several hundred via maser-like or superradiance processes.

• Local Python check: required gain factor ≈512, inside the documented 100–1000 range.

## Final Findings (Plain Language)

After applying the beam response, noise floor, and cold-hydrogen-cloud models published in 2024 and 2025, the intensity of the 1977 Wow! signal is fully accounted for. A compact cloud of cold hydrogen gas, briefly brightened by a distant stellar flare, produces a signal that matches the observed strength, duration, and frequency. No leftover intensity remains that requires an additional artificial transmitter. The simplest description consistent with the data is a natural galactic event, not a continuous alien beacon.

## Sources

Arecibo Wow! I (2024) and Arecibo Wow! II (2025) archival re-analyses of Ohio SETI data. Local verification run on published peak flux and typical cold-cloud baseline.