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**JUL WANI' QOQ DE' HE: PE'MEH  
WANI' QOQ TLHEGH NIV WANI'**

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# jul wan! QoQ De' He: pe'meH wan! QoQ tlhegh nlv wan!

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## ngoD

pe'meH wan! -- jul CME -- tera' pe'meH He choH 500 nT/min law' (Kp >= 7). logh Dop latlh Devwl' QoQ tlhegh -- impedance choH 'eSorghlu'. pe'meH Dlch Say' tlhegh -- immune. 12 tlhegh (wej Hoch tier) October 2024 pe'meH wan! (Kp = 8.3) -- Tropic 0.08% impedance choH, Equinox 0.003%, Zero-Point chuS rav blngDaq. Solar Activity Index wlqelpu'.

## 1. NGOQ

jul 11-DIS cycle -- jul wan! 'ej CME -- pe'meH wan! -- tera' Daq pe'meH He choH tln. Cycle 25 -- predicted law' HoS.

pe'meH He choH -- HoS grid (GIC), pipeline, magnetometry -- 'eSorghlu'bogh. QoQ tlhegh wan! -- HaDlu'be'.

mechanism: logh Dop latlh Devwl' -- nagh qach preferred orientation pe'meH He relative. pe'meH He choH -- nagh orientation 'ej He relationship shift -- effective bot choH. bot modulation -- audio De' unwanted modulation.

pe'meH Dlch Say' tlhegh -- preferred nagh orientation Hutlh -- pe'meH He immune -- directional coupling Hutlh. ghltlvam hypothesis test.

## 2. MIW

12 tlhegh (1.0 m, RCA) -- pe'meH yoD Hutlh pa' -- wej tlhegh Hoch tier (Tropic, Meridian, Equinox, Zero-Point). Keysight E4990A bot 'oghw! 1 kHz, 5-second interval.

Bartington Mag-13 fluxgate magnetometer 1 m tlhegh vo'.

'eSorghwl' September 15 vo' November 15, 2024 -- 5.3 million bot 'oghw! tlhegh Hoch. wej pe'meH wan!': September 18 (Kp 5.7), October 10-12 (Kp 8.3), November 3 (Kp 6.1).

cross-correlation dB/dt 'ej dZ/Z -- 60-second sliding window.

## 3. LUT

October 10-12 wan! (Kp 8.3):

Tropic: 0.082+/-0.008%

Meridian: 0.031+/-0.004%

Equinox: 0.0033+/-0.0005%

Zero-Point: < 0.0001% (chuS rav blngDaq)

cross-correlation dB/dt!" dZ/Z: Tropic r=0.71, Meridian r=0.54, Equinox r=0.23, Zero-Point

dZ/Z "H k x HBA x dB/dt, k = 2.1x10{v.

pe'meH tam (Kp <= 2) -- Hoch tier chuS rav blngDaq.

## 4. JA'CHUQ

lut confirm: logh Dop latlh tlhegh -- pe'meH wan! sensitive -- sensitivity latlh tlnmoH proportional. Zero-Point yoq muv Devwl' HBA 0.00001deg blngDaq -- jul wan! immune. immunity shielding Qo' -- nagh qach directional Hutlh fundamental.

0.08% bot choH -- -62 dB signal relative -- audibility joj questionable. 'ach choH steady-state Qo' -- pe'meH wan! chaotic temporal qach modulate -- chuS mlgh clarity 'ej spatial precision nup.

Solar Activity Index (SAI) wlqelpu' -- max(dZ/Z) / max(dB/dt). Zero-Point SAI < 10{y -- "S

## 5. BERTLHAM

pe'meH wan! -- QoQ tlhegh logh Dop latlh -- bot choH 'eSorghlu'. latlh tlnmoH 'ej wan! HoS proportional. pe'meH Dlch Say' tlhegh



(HBA < 0.00001deg) immune. Solar Activity Index standard QoQ thegh specifications.

## DE'MEY

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