

QuarkNet



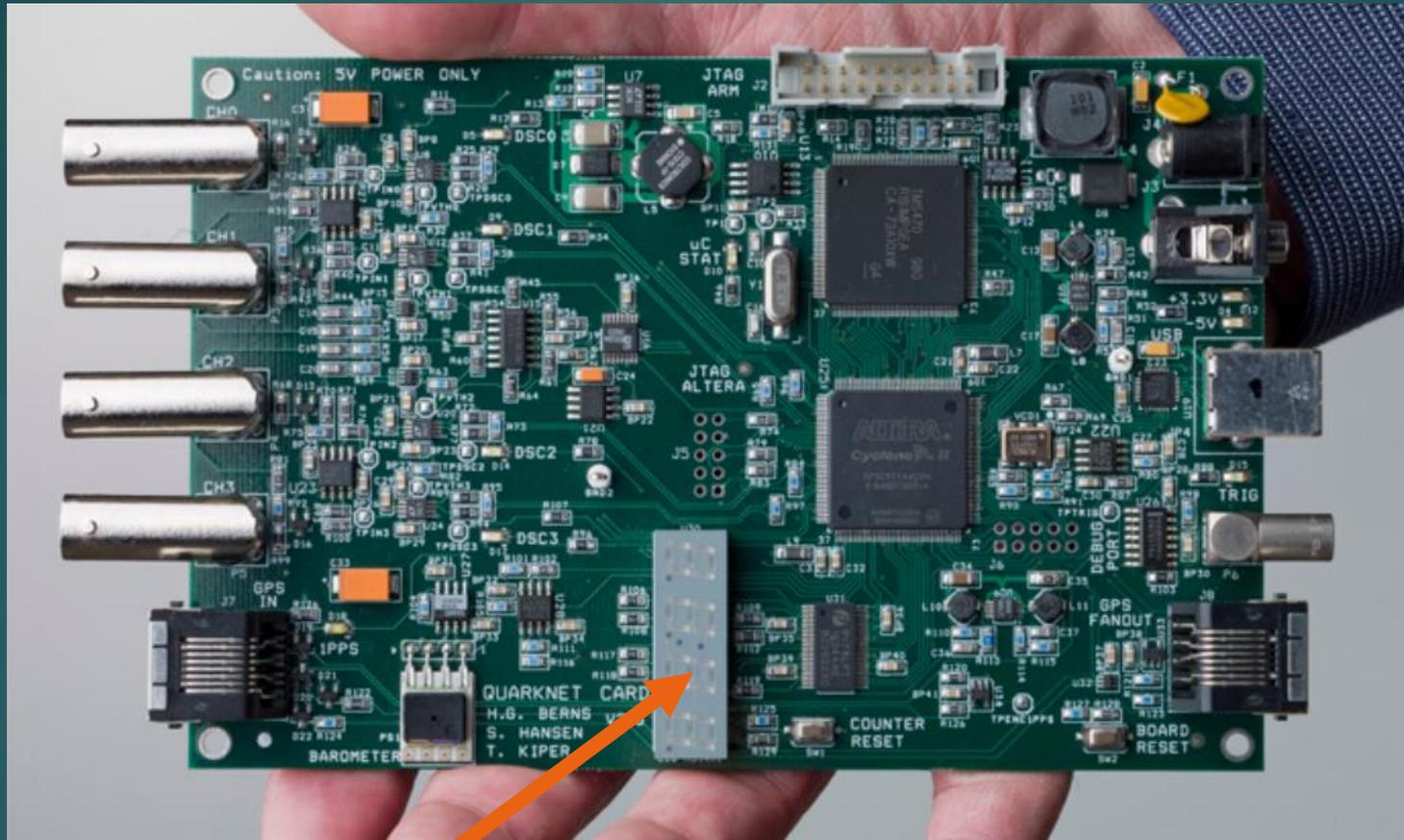
# CRMD Counting Studies Without eLab

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# Stopwatch and DAQ Counter



# Change Status Line in EQUIP

- ▶ From H2 on command line in EQUIP (Help Menu 2)

```
Status
ST      - Send status line now. This reset the minute timer.
ST 0    - Status line, disabled.
ST 1 m  - Send status line every (m) minutes.(m=1-30, def=5).
ST 2 m  - Include scalar data line, chs 50-54 after each status line.
ST 3 m  - Include scalar data line, plus reset counters on each timeout.
```



Control Panel TOT Monitor Rate Monitor Shower Monitor Muon Lifetime Monitor Geometry

Log file: C:\Users\cosmic\Desktop\Data 6818\CR\_DAO\_6818\_10\_SEP\_2015.txt Choose File

Serial port: COM4

S/N: 6818 Update Reset scalers(RB) Reset board(RE) GPS(DG)

Help: Page 1(H1) Page 2(H2) Barometer(HB) Status(HS)  
Trigger(HT) Setup(V1) Voltages(V2) GPS Lock(V3)

GPS status: A (valid) Sats used: 9 T= 22.4 deg C P= 1023.351 hPa DAC= 1608

Latitude: 42.06.696144 N Longitude: 087.49.823360 W

Altitude: 205.432m Time: 10/09/15 14:24:29.007

Scalers(DS): 6946 7003 6751 7642 87

Control registers(DC): 3F 70 0A 00

Timing registers(DT): 00 ED F1 00

Trigger  
 Ch. 1  Ch. 2  Ch. 3  Ch. 4 Coincidence level: 4  
Gate width: 100 ns Pipeline delay: 40 ns

Threshold(TL): 300.0 300.0 300.0 300.0 mV

Status output: Reset scalers(ST 3 x) time interval: 5 min

Data output: Enable(CE) Disable(CD)

Command: Capture Configuration(SA 1)

8EFAA8A	00	00	00	00	00	00	00	3E	8E4D2550	210246.006	100915	A	09	0	+0064
CD3D9D86	AF	00	2E	00	00	00	00	00	CD2EC851	210258.006	100915	A	09	0	+005E
CD3D9D86	00	00	00	00	32	00	31	00	CD2EC851	210258.006	100915	A	09	0	+005E
CD3D9D86	00	3D	00	3E	00	3F	00	00	CD2EC851	210258.006	100915	A	09	0	+005E
CD3D9D87	00	00	00	00	00	00	00	28	CD2EC851	210258.006	100915	A	09	0	+005E
D0E030F5	A9	00	2B	00	2E	00	2E	00	D02988D1	210300.006	100915	A	09	0	+0064
D0E030F5	00	3D	00	3A	00	3D	00	00	D02988D1	210300.006	100915	A	09	0	+0064
D0E030F6	00	00	00	00	00	00	00	28	D02988D1	210300.006	100915	A	09	0	+0064
D6099B12	AD	00	2C	00	00	00	00	00	D4A2218E	210303.014	100915	A	09	0	+005E
D6099B12	00	00	00	00	31	00	30	00	D4A2218E	210303.014	100915	A	09	0	+005E
D6099B12	00	3F	00	00	00	00	00	00	D4A2218E	210303.014	100915	A	09	0	+005E
D6099B13	00	00	00	24	00	22	00	26	D4A2218E	210303.014	100915	A	09	0	+005E
D79E59C6	80	00	2E	00	00	00	00	00	D61F99CE	210304.006	100915	A	09	0	+0064
D79E59C7	21	00	00	00	23	00	20	00	D61F99CE	210304.006	100915	A	09	0	+0064
D79E59C7	00	2F	00	00	00	00	00	00	D61F99CE	210304.006	100915	A	09	0	+0064
D79E59C7	00	00	00	31	00	30	00	33	D61F99CE	210304.006	100915	A	09	0	+0064
D81D5DF8	A9	00	29	00	2F	00	2B	00	D79D120E	210305.014	100915	A	09	0	+0032
D81D5DF8	00	3C	00	3F	00	3C	00	00	D79D120E	210305.014	100915	A	09	0	+0032
D81D5DF9	00	00	00	00	00	00	00	23	D79D120E	210305.014	100915	A	09	0	+0032
DCD70D5B	B2	00	35	00	00	00	00	00	DC157AD1	210308.006	100915	A	09	0	+0064
DCD70D5B	00	00	00	00	3B	00	3B	00	DC157AD1	210308.006	100915	A	09	0	+0064
DCD70D5C	00	00	00	24	00	00	00	00	DC157AD1	210308.006	100915	A	09	0	+0064
DCD70D5C	00	00	00	00	00	2A	00	2E	DC157AD1	210308.006	100915	A	09	0	+0064
DCD70D5C	00	30	00	00	00	00	00	00	DC157AD1	210308.006	100915	A	09	0	+0064
DDC6396A	A2	00	22	00	00	00	26	00	DD92F30E	210309.014	100915	A	09	0	+005E
DDC6396A	00	00	00	00	28	00	00	00	DD92F30E	210309.014	100915	A	09	0	+005E
DDC6396A	00	32	00	32	00	35	00	00	DD92F30E	210309.014	100915	A	09	0	+005E
DDC6396A	00	00	00	00	00	00	00	3A	DD92F30E	210309.014	100915	A	09	0	+005E
DE54138B	B1	00	33	00	33	00	33	00	DD92F30E	210309.014	100915	A	09	0	+005E
DE54138B	00	00	00	3D	00	00	00	00	DD92F30E	210309.014	100915	A	09	0	+005E
DE54138C	00	24	00	00	00	24	00	24	DD92F30E	210309.014	100915	A	09	0	+005E
E266AB9A	BE	00	3E	00	00	00	00	00	E20B58D1	210312.006	100915	A	09	0	+0064
E266AB9B	00	00	00	00	24	00	21	00	E20B58D1	210312.006	100915	A	09	0	+0064
E266AB9B	00	35	00	00	00	35	00	36	E20B58D1	210312.006	100915	A	09	0	+0064
E266AB9B	00	00	00	39	00	00	00	00	E20B58D1	210312.006	100915	A	09	0	+0064
EB72D8E6	AB	00	2C	00	00	00	00	00	EAFCD51	210318.006	100915	A	09	0	+0064
EB72D8E6	00	00	00	00	32	00	31	00	EAFCD51	210318.006	100915	A	09	0	+0064
EB72D8E6	00	3F	00	00	00	00	00	00	EAFCD51	210318.006	100915	A	09	0	+0064
EB72D8E7	00	00	00	21	00	21	00	00	EAFCD51	210318.006	100915	A	09	0	+0064
EB72D8E7	00	00	00	00	00	00	28	00	EAFCD51	210318.006	100915	A	09	0	+0064
EFF3BF33	A2	00	24	00	00	00	00	00	EF749611	210321.014	100915	A	09	0	+005E
EFF3BF33	00	00	00	00	28	00	2B	00	EF749611	210321.014	100915	A	09	0	+005E
EFF3BF33	00	35	00	00	00	00	00	00	EF749611	210321.014	100915	A	09	0	+005E
EFF3BF33	00	00	00	3B	00	39	00	3F	EF749611	210321.014	100915	A	09	0	+005E
F7C8B380	B7	00	27	00	00	00	00	00	F6E7EF91	210326.006	100915	A	09	0	+0064
F7C8B380	00	00	00	00	3A	00	3C	00	F6E7EF91	210326.006	100915	A	09	0	+0064
F7C8B381	00	26	00	00	00	00	00	00	F6E7EF91	210326.006	100915	A	09	0	+0064
F7C8B381	00	00	00	2A	00	2E	00	2E	F6E7EF91	210326.006	100915	A	09	0	+0064



# EQUIP Settings

- ▶ Coincidence Level should be the number of counters you are using. This is a specific parameter for counting studies without eLab.
- ▶ Gate Width: 300 ns    Pipeline Delay 100 ns (should be regular settings)
- ▶ Status Output: ST 2 **n** (Local counting studies. Regular use: ST 3 5)
  - ▶ **n** is the interval in minutes for report.

# CAUTION: Roll Over

- ▶ 4 minute run sample
  - ▶ Estimate 24 hour count. Does it exceed counter limits?

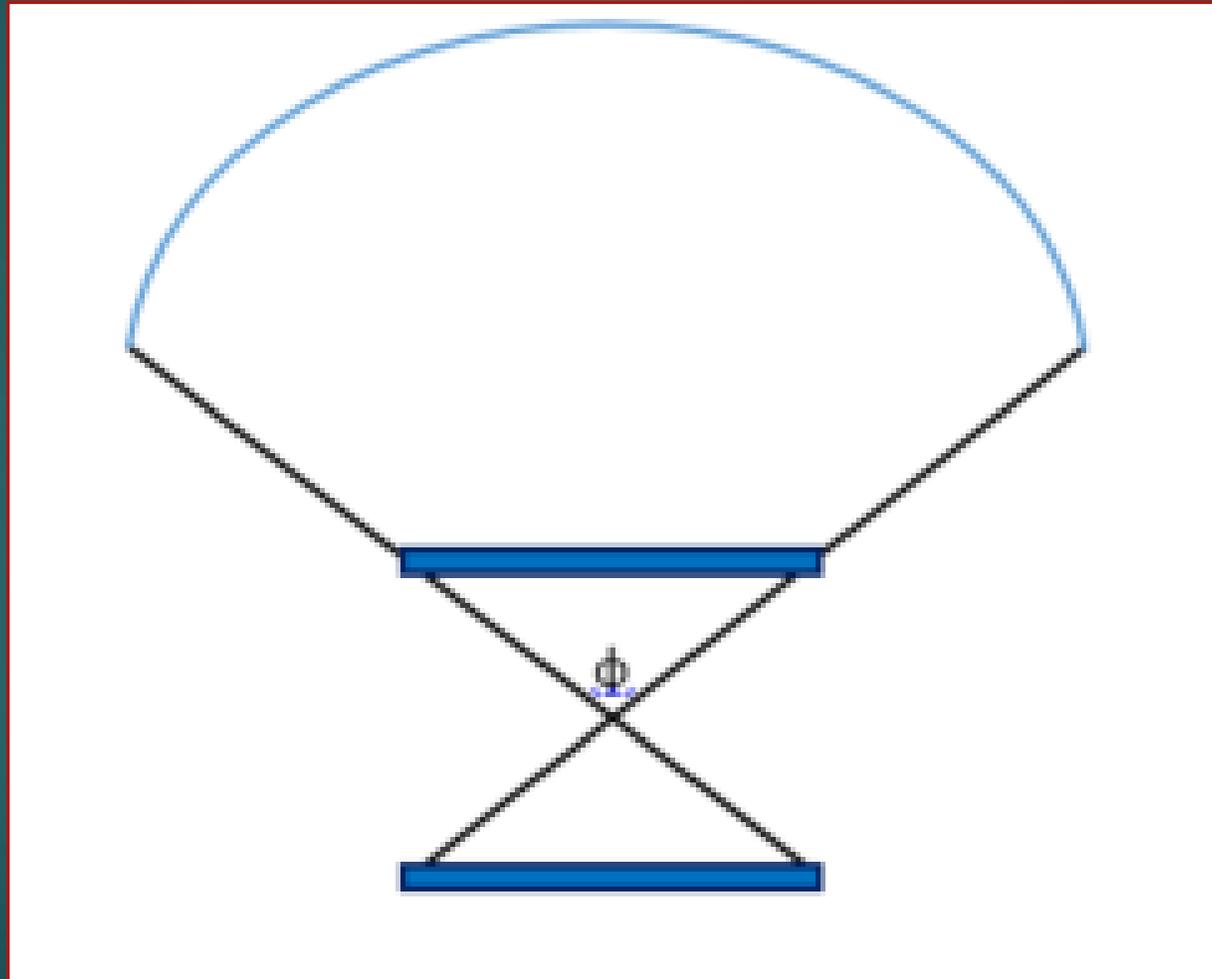
# Types of Studies

- ▶ Triangle Shower
- ▶ Angle Acceptance
- ▶ Shielding (can be tricky)
- ▶ Zenith Angle ( $\cos^2\theta$ )
- ▶ E-W N-S

# Triangle Shower Study

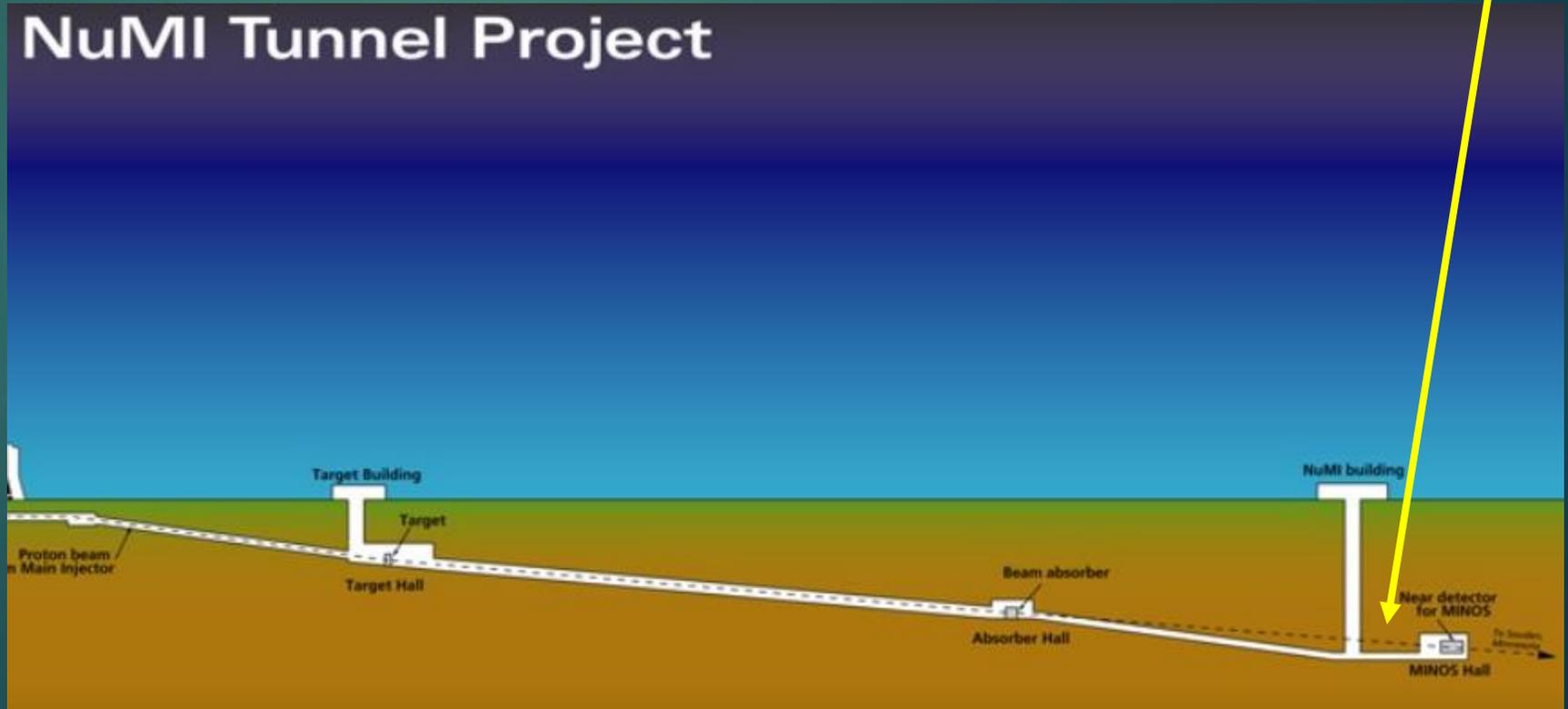


# Angle of Acceptance



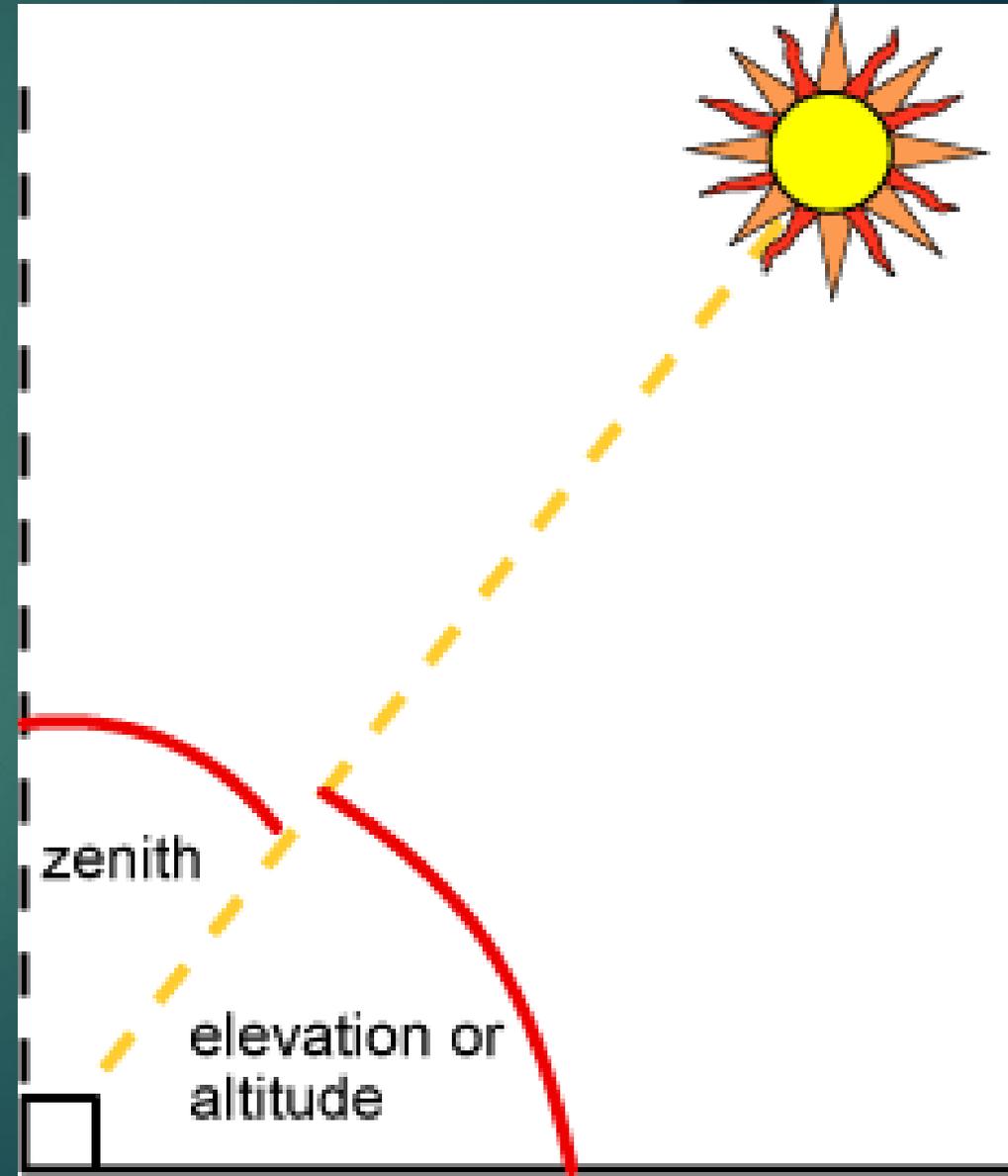
# Shielding

- ▶ Depth in building
  - ▶ Careful of walls!
- ▶ Copper or steel (lead, uranium) plates
- ▶ Tunnels



# Directional Studies

- ▶ Angle from Zenith
- ▶ North – South versus East – West



# Poster

Poster File Name:   
(e.g., poster\_lifetime)

**Poster Tag**   
Altitude  
Barometric\_pressure  
Blessing

**Title:**

**Subtitle:**

**Authors:**

**Date:** 06/11/2021

**Abstract:**  
(Brief Overview of purpose,  
procedures, results &  
conclusions)

*I* U |   |  $x_2$   $x^2$  |  HTML |  $\Sigma$  |  |   |    |    |  

Path: p



**Conclusion:**

(Interpret results, suggest further study)



**Reasoning**

Why the evidence supports the claim:

*My data plot explains the evidence for these reasons...*

Path: p » span » strong

**Bibliography:**



Path: p

# Questions?



