

XXXXXXXXXX XX XXXXX XXXX XXXXXXX XXXX XXXXXXXXXX XXXXXXX XX
:XXX XXXX XXXXXXX

.XXXX XXXXXXXXXX XXXXX XXXXXXX XX XX XXXXXXXXXX

XX XXXXXXXXXX XXXXXXX XX :XXXXXXX XXXXXXX (2022)

XXXXXXXXXXXX

[Science.org](https://www.science.org) :□□□□

:XXXXX XXXXXXX XX XXXXXXXXX

XXXXXXXXXX XXXXX XX XXXXXXXXXX XXXX XX XXXX XXXX XXXX

XXXX

XXXX XXXXXXXXXX XXXXXXX XX XX X XXXXX XXXXX XXXXXXXXXX XXXXXXX XXXX
XXXXX XXXXXXXXXX .XXXXX XXXXX XXXXXXXXXX XXXXX XXXXXXX XXXXXXX XXXXXXX
XXXXXX XX XX XXXXX XX XXXXX .XXXXX XXXXX XXXXX X XXXXX XXXXX XXXX
XXXXXXX XXXXXXXXXX XX XXXX XXXXX .XXXXX XXXXXXXXXX XXXXXXX XX XXXXXXX
XXXXX XXXX XXXXX XX XXXXXXXXXX XXXXX XXXX XX .XXXXXXX XX XX X XXXXXXXXXX
XXXXX XX XXXXXXXXXX XXXX XX ...XX XXXXX XXXXX .XXXXXX XXXXX XXXXX
.XXXXX XXXXXXX

XX .XXXX XXXXX XXXXXXXXXX XXXXXXXXXX :XXXX XXXX XXXXX XXXX XXXXXXX XX
XXXXXXX .XXXXXX XXXXX XXXXXXXXXX XXXXXXXXXX XXXXXXXXXX XXXXXXXXXX
XXXXXXX XXXXX .XXXXXXX XX XXXXX XXXXXXXXXX XXXXXXXXXX XXXXXXXXXX
.XXXXXX XX XXXXXXXXXX

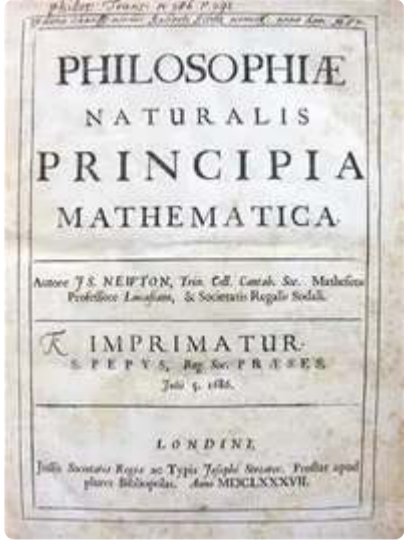
XXXXXXXX XXXXXXX XXXXXXX XX XXXXXXXXXX XXXXXXX XXXX XXXXXXXXXX XXXXXXXXXX XX
XX XXXXXXXXXX XXXXXXX XXXXXXX .XXXX XXXXXXX XXXXXXXXXX XXXXXXX XXX XXXXXXX XXXXXXX
XXXXX XXXXXXXXXX XXXX XXXXXXXXXX XXXXXXXXXX XXXXXXXXXX XXXX XX XXXX XXXX
XXXXX XXXX XX XXXXXXXXXX XXXXXXX XXXXXXXXXX XXXXXXXXXX XXXX XXXX XXXX
XXXXX XXXXXXX XXXX XXXXXXX XXXXXXX XXXXXXX XXXXXXX XXXX XXXXXXX XXXX XXXXXXX
XXXXXXX XXXXXXX XXXXX .XXXXXXX XXXXX XX XXXXXXX XXXX XX XXXXXXX XXX XXXXXXX
XXXXXXX XXXXXXX XX XXXXXXXXXX XXXXXXX XXXXXXXXXX XXXXXXXXXX XXXXXXXXXX XXXXXXXXXX
.XXXXXXX XXXXXXX XXXXXXXXXX XXXXXXXXXX

XXXXXXXX XXXX XXXXXXX XX XXXXXXXXXX XXXXXXXXXX XXXXXXXXXX XXXXXXXXXX XXXXXXX XXXXXXX
.XXXXXX XXXXXXXXXX XXXXXXX XXXXXXXXXX XXXXXXXXXX XXX XXXXXXXXXX

.X.X XXXX

.x xxx

x x x x x x x x x x



o o o o o o o o o o o o o o
o o o o o o «o o o o o o»

xxxxxxx «xxxxxxx xxxxxxx» xxxxxxx xxxxxxxxxx xxxxxx xxx xxx
xx xxxxxx xxxxxxxxxx xxxxxxxxxx xxx xxxxxxxxxx xxxxxxxxxx .xxxxx
xxxxxxxxxxx xxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxx «xxxxxxx»
.xxxxxxxxxxx xxxxxx xxxxxx xxx xxxxxxxxxx

xxxxxxxx xxxxxxxxxx xxx xxxxxxxxxx xxx xxxxxxxxxx xxxxxxxxxx xxx xxxxxx
xxxxxxxx xxxxxx xxx xxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxx xxx xxxxxxxxxx xxx xxxxxxxxxx
xx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxx xxx xxxxxxxxxx xxxxxxxxxx xxx
.xxxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxx xxxxxxxxxx xxxxxxxxxx xxxxxx

xxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxx xxxxxxxxxx xxxxxxxxxx

xx xxxxx xxxxxxxxxx xxx xxxxxxxxxx xxxxxxxxxx xxx xxxxxxxxxx xxxxxxxxxx xxxxxx E=mc²
xxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxx .xxxxxxx xxxxxxxxxx
xxxxxx xxx xxxxxx xxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxx xxxxxx xxxxxxxxxx xxxxxxxxxx xxx xxx
.xxxxx xxxxxx xxxxxxxxxx xxxxxxxxxx xxx

xxxxxxxxxxx xxxxxx xxx xxxxxxxxxx xxx xxxxxxxxxx xxx xxxxxx xxxxxxxxxx xxxxxxxxxx xxx xxxxxxxxxx
xxxxxxxxxxx xxxxxxxxxx xxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx
xxxxxx .xxxxx xxxxxxxxxx xxxxxxxxxx xxx xxxxxxxxxx xxxxxxxxxx xxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx
xxxxxxxxxxx xxxxxx > :xxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxx «xxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxx»
xxxxx xxxxxx xxxxxx «.xxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxx xxxxxxxxxx -xxxxx xxx xxxxxx xxxxxx
xxxxxxxxxxx .xxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxx xxxxxxxxxx xxxxxxxxxx xxx xxxxxx
xxxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxx xxxxxxxxxx xxxxxxxxxx xxx xxxxxx «xxxxxxx» xxxxxxxxxx xxxxxxxxxx
.xxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx

xxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx ∞ xxx xxxxxxxxxx «xxxxx xxxxxxxxxx» xxxxxx xxxxxxxxxx xxxxxxxxxx
xxxxxxxxxxx xxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx
xxxx xxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx .xxxx xxxxxxxxxx
xxxxxxxxxxx xxxxxxxxxx .xxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxx xxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx
xxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx
xxxxx xxxxxx xxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx «xxxxxxx xxxxxxxxxx» .xxxx xxxxxx xxxxxxxxxx
.xxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx

.x xxx

x x x x x x x x x x x x x x x x x x

xxxxx xxx x xxxxxx xxxxxxxxxx xxxxxx xxx xxx
<xxxxxxx xxxxxx xxxxxxx> xxxxxx xxx xxxxxxxxxx xxx xxx xxxxxx xxxxxxxxxx
xxx xxx xxxxxx xxxxxxxxxx xxx xxx xxx .xxx <xxxxxxx> xxxxxx xxx
xxxxxxx xxxxxx xxx xxxxxx xxxxxxxxxx xxx xxxxxx xxxxxx xxxxxx xxxxxx
.xxx xxxxxx xxxxxxxxxx xxxxxxxxxx
xx xxxxxx xxxxxxxxxx xxxxxxxxxx xxx xxx xxx xxxxxxxxxx xxxxxx <xxxxxxx>
xxxxx x xxxxxx xxxxxxxxxx xxxxxx xxxxxx xxxxxxxxxx xxxxxx xxxxxxxxxx
xx xxx xxxxxx xxx xxxxxxxxxx xxx xxxxxxxxxx xxxxxx xxx xxxxxxxxxx xxx xxxxxx
.xxx xxxxxxxxxx xxx xxxxxxxxxx xxxxxx xxxxxxxxxx xxx xxxxxxxxxx xxxxxxxxxx
xxxxx xxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx <xxxxxxx xxx> xxxxxxxxxx
.xxxxx xxxxxx xxxxxx xxxxxxxxxx xxxxxx xxxxxxxxxx xxx xxxxxxxxxx
xxxxxxx xxx xxxxxx xxxxxx xxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxx xxxxxx xxxxxx
xx) <xxxxxxx xxx> xxx .xxx xxxxxxxxxx xxxxxxxxxx x xxxxxxxxxx xxxxxx xxxxxx
xxxxxxx xxxxxx xxxxxxxxxx xxx xxxxxx xxx (<xxxxxxx xxxxxxx> xxxxxx xxxxxx
.xxx



□□ □□□□□□ □□□ □□ □□□□□□ □ □□□□□□□
.□□□□ □□□

xxxxx xxxxxx xxxxxx xxx <xxxxxxx xxxxxxx> xxxxxx xxxxxx
xx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx
xxxxx xxx xxx xxxxxxxxxx > xxx xxxxxxxxxx xxxxxx xxxxxxxxxx
.xx xx <xxxxxxx xxxxxx xxxxxxxxxx>
xxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxx xxx' (C
<.xxxxxxx xxxxxxxxxx xxxxxxxxxx xxx xxxxxxxxxx xxxxxxxxxx xxx
xxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxx xxx xxx' (C
<.xxxxxxx xxxxxxxxxx xxxxxxxxxx

xxxxxxx xxxxxx xxx xxxxxx xxxxxxxxxx xxxxxxxxxx xxx xxx
xxxxxxx xxxxxx xxx xxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx
xxxxxxx xxx xxxxxxxxxx xxxxxxxxxx xxx xxxxxx xxxxxxxxxx xxxxxxxxxx
xxxxxxx xxxxxx xxxxxx xxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx
xxxxxxx xxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxx xxxxxxxxxx .xxxxxxx
xx xxxxxxxxxx xxxxxxxxxx xxxxxx xxx xxxxxxxxxx xxxxxxxxxx xxx
xxxxx xxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxx .xxxxxxx
.xxxxxxx xxxxxx xxxxxx xxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx



□□□ □□ □□□□□□□□-□□□ □□□□□□□
□□□□

×× ×× ×× ××××× ×××××× ××××××× ×× ××××× ××× %99 ×× ×××× ×××
×××× ×× ×××× ××××× ×××× × ××××× ×××× ×××× <×××××××××>
×××× ×× ×××× ×× ××××××× ×××××××× ××××××× ××××××× ×××××××××××
×× ×××××× ×××××× ×× × ××× ××××××× ×××××× ×××× ××××××× ×××××
×××××××× ××××> ×× ×××× ××× ×××××× ××××××× ××××××× ××××××× ×××××××
.×××××× ××××× ×××××××× ××× ×××××× ××××× ×× <××××××× ×

.x xxx

XXXXXXXXXX XXXXXXXX

.xxxx xxxxxx xx xxxx xx xxxxxxxx xxxxxx xxxxxxxx xx xxxxxxxxxx xxxxxx

xxxxxxxxxxx xxxxxxxx xxxxxx xxxxxxxx xx xx xxxxxxxxxx xxxxxxxx xxxxxx xxxxxxxx xx

xx xxxxxxxxxx xxxxxxxxxx xxxxxx xxxxxxx xxxxxx <xxxxxxxx xxxxxxx> xx xxxxxxxxxx

xxxxxxxx xxxxxxxx xx xxxxxx xxxxxxxx xxxxxxxx xx xx xxxxxx xx xxxxxx xxxxxxxxxx xxxxxx

xxxx xxxxx xx xxxxxx <xxxxx xxxxxx> xxxxxxxx xx xxxxxxxxxx xxxxxxxxxx xxxxxxxx xxxxxx

xxxxxxxx xxxxxx xx xxxxxx xxxxxxxxxx xxxxxx xx xxxxxx xxxxxxxxxx xx xxxxxx xxx xxxxxxxxxx xxxxxx

.xxxxx xxxxxxxx xxxxxx

x xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxx xx xxxxxxxxxx xxxxxxxx xx

xxxxxxxxxxx xx Carl W. Johnson xxxxxx xxxxxxxxxx .xxxxx xxxxxx xxxxxxxxxx xxxxxxxxxx

xx <xxxxxxxx xxxxxx xxxxxxxxxx> xxxxxxx xx xxxxxx 2019 xxxxxxx xx xxxxxxxxxx

xxxxxxxxxxx xxxxxx xxxxxx xxxxxxxxxx xxxxxx xxxxxxxxxx xxxxxxxx xx xxxxxx xxxxxxxxxx xxxxxx

:xxxx xxxxxx

xx xxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx

xxxxxxxx xxxxxxxxxx xxxxxxxxxx .xxxx xxxxxxxxxx xx xx-xx-xx xxxxxxxxxx xxxxxxxxxx

xx xx-xx-xx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxx xxxxxxx xxxxxxxxxx xxxxxxxxxx

.(xxxxxxxx xxxxxxxxxx) xxxxx

xxxxxxxx xxxxxx xxxxxxxxxx (2019)

Academia.edu :□□□

.x.x xxx

XXXXXXXXXX XXXXXXXX

x xxxxxxxxxx) xxxxxxxx xxxxxxxxxx xx xxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx

xx xxxxx (W/Z⁰ xxxxxxxx xx xxxxxxxxxx <xxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx>

.xxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx

▶ xxxxxxxx xxxxxxxxxx (xxxxxxxxxxx xx xxxxxxxxxx xxxxxx xx) xxxxxxxxxx xxxxxx xx
.xxxxxxx

▶ xx xxx xxx (xxxxxxxx xxxxxxxxxx xx xxxxxxxxxx xxxxxx) Z⁰ xxxxxxxx xx xxxxxx xxxxxx
xxxxxxxxxxx xxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx
.xxxxxxx

xxx .xxx xxxxxx (xxxxxx xxxxxx < xxxxxx xxxxxx xxxxxx xxxxxx > xxxxxx
xxxxxxx xxxxxx xx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
xxxxxxx xxxxxx xx < xxxxxx xxxxxx > xxxxxx xxxxxx xxxxxx xxxxxx
xx xxxxxx xx xx xxxxxx) xxx < xxxxxx xx xxx > xx < xxx xxx xxx >
(xxxxxx < xxxxxx xxxxxx >

.x.x xxx

x x x x x x x x

x x

xx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
xxxxxxx xxxxxx xxxxxx xxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
. xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx

< xxxxxx xxx > xx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx (2024)
xxxxxxx xxx

xxxxxx xxxxx xx xxx xxxxxx xxxxxx xxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
. xxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx

Science News : □□□□

xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
xxxxxxx xx xxxxxx xxxxxx xxxxxx xxxxxx < xxxxxx xxxxxx > xxxxxx
xxxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxx xxxxxx xxx xxxxxx
. xxxxx < xxxxxx > xxxxxx xxxxxx xxxxxx xxx xxxxxx xxxxxx xxxxxx xxxxxx

xx xxxxxx xxxxxx xxxxxx xxxxxx xxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
xx xxxxxx xxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
. xxxxxx xxxxxx xxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx

xx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx < xxxxxx > xxxxxx xxxxxx
. xxxxxx xxxxxx (xxxxxx) xxxxxx xxxxxx xxx xxxxxx xxxxxx xxxxxx

xx xxxxxx xxxxxx xxxxxx (xxxxxx xxxxxx xxxxxx) xxxxxx xxx xxxxxx
. xxxxxx xxxxxx xxxxxx xxx < xxxxxx xxxxxx >

xx xx xx xxxxxx xxxxxx - xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
xxxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
. xxxxxx xxxxxx xxx xxxxxx xxxxxx xxxxxx

xxxx xx xx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx COHERENT xxxxxx
: xxxxxx xxxxxx xxxxxx

xx (N) xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx

xxxx . xxxxxx xxxxxx xxxxxx N^2 xxxxxx . xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx

x

xx xxxxx xxxxxxxxxxx xxxxx .xxx xxxxxxx xxxxxxx xxxxxxxxxxx xxxxxxx
xxxx xxxxxxxxxxxxxxxxxxx xxxxxx xxxxxxx xxx xxxxxxxxxxx xxxxxxxxxxx xxxxxxxxxxx xxxxxxx
.xx

xxxxxxxx xxxxx xx xxxxxxxxxxx xxxxxxxxxxx xxxxxxxxxxx xxx xxxxxxxxxxxxxxxxxxx
xx .xxxxxxxx xxxxxx xxxxxx xxxxxxxxxxx xxxxxxx xxxxxxxxxxx xxxxxxx xx xx xxxxxx
xxxxxxxx xxxxxxxxxxx xxx xx xxxxxx xxxxxx xx xx xxxxxx xxxxxx xx xxxxxx xxxxxxxxxxx

x(xxxxxxxxx xxxxxx xxx xx xxxxxx xxxxxxxxxxx xxxxxxx) xxxxxxx xxxxxxx
xxx) Super-Kamiokande xxxxxx xxxxxxxxxxx xxx xxxxxx xxxxxx xxxxxxxxxxxxxxxxxxx

xxxxxxxx xxxxx xx .xxxxxxxx xxxxxxx xxxxxx xxxxxxxxxxx xxx xxxxxx xx (xxxxxxxx xxxxxxx

x (IceCube  xxxxxx) xxxxxxxxxxx xxxxxxx xxxxxxxxxxx xxxxxx xx xxxxxxx xxxxxxxxxxxxxxxxxxx

xxxx xx .xxxxxxxx xxxxxx xxxxxxxxxxx xxx-xxx xxx xxxxxxxxxxx xxxxxxxxxxxxxxxxxxx

xxxx x (xxxxxxxx xxxxxxxxxxx xxx) Hyper-Kamiokande xxxxxxx xxxxxxxxxxxxxxxxxxx xxxxxxx
xxxxxxxx xxxxxx xxxxxxxxxxx xxx-xxx xxx xxxxxxxxxxx xxxxxx xx xxxxxxxxxxx DUNE xxxxxx

:xxxx xxxxxxxxxxx xxxxxxx xxxxxxxxxxx xxxxxxxxxxx DUNE xxxxxxxxxxx .xxxxxx


xx xxxxxx xxxxxxxxxxxxxxxxxxx xxx xx (xxxxxxxx xxxxxxxxxxx xxx xxx) xx xxxxxx xxxxxxx

xx xxxxx xx xxxxxxxxxxx xxxxxxx xxxxxxxxxxx xxxxxxx xxxxxx xx xxxxxx xxxxxxxxxxxxxxxxxxx xxxxxxx

.xxxx xxxxxxxxxxx xxxxxxx xxxxxxxxxxx xxx-xx

xxxxxxxx x xxxxxx xxxxxx xxxxxx xxx xxxxxxxxxxx xxxxxx xxxxxxxxxxxxxxxxxxx xxxxxx xxxxxxx

:xxxxxxxx xxxxxxxxxxx xxxxxx xxxxxxxxxxx xxxxxx xxxxxxxxxxx xxxxxx xx xxxxxxxxxxxxxxxxxxx xxxxxx

- ▶ xxx :xxxx - (JUNO) xxxxxxxxxxx xxxxxxxxxxx xxxxxxxxxxx
- ▶ xxxxxxx :xxxx - (xxxx TPC xx xxxxxxxxxxx xxxxxxx) NEXT
- ▶ xxxxx xxx :xxxx - IceCube xxxxxxxxxxx 

[xxxxxxxxxxxxxxxxxxxxxxxx]

xxxxxxxx xxxxxx xxx xxxxxxxxxxx xxxxxxxxxxx xxxxxxxxxxx xxxxxxxxxxx xxxxxxxxxxx xxxxxxx
:xxxx

xxxxxxxx xx xxxxxxxxxxxxxxxxxxx xxxxxxxxxxx xxxxxxxxxxx xxxxxxxxxxx xxxxxxxxxxx
.xxxxxxxx xxx xxxxxx xxxxxx xxxxxxxxxxx xxxxxx xxxxxxxxxxx xxxxxxxxxxx xxxxxxxxxxx

xxxxxxxxxxxxxxxx xxxxxxxxxxx xxxxxxxxxxx xxxxxx xxxxxxxxxxx xxxxxx (2024)

xxxx xxxxxxxxxxx xxx xxxxxxxxxxxxxxxxxxx

.x xxx

x x x x x x x x x

xxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx
.xxxx xxxxxxxx xxxxxxxx xxxxxxxx xxx

xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx <xxxxxxx xxxxxxxx>
.xxxx xxxxxxxx

xx xxxxxx xxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx
xx xxx xxx xxx xxxxxxxx <xxxxxxx xxxxxxxx> xxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx
.xxxxxxx xxxxxxxx xxxxxxxx

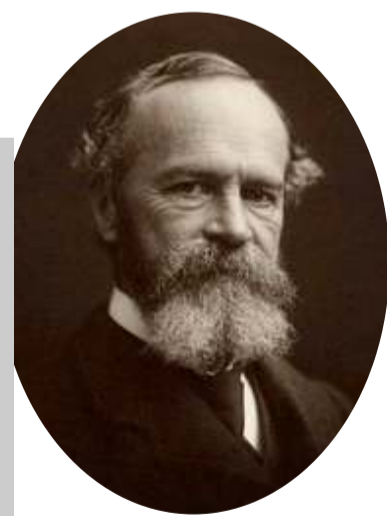
.xxxx xxxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxxxxx

xx xxxxxxxx xxxxxxxx xxx xxxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxxxxx xxxxxxx
xxxx xxxxxx xxx xxx xxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxx xxxxxx
xx xxxxxx xxxxxxxxxx xxxxxxx xxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxx xxx xxxxxx
.xxxxxxx xxxxxxxx <xxxxxxx xxxxxxxxxx xxx xxxxxxxxxx xxxxxxxx>

xxxxxxx xxxxxxxxxx xx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxx
xxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxx xxx xxxxxxxxxx xxxxxxx xxxxxxxx :xxxxx
xxxxxxx xxxxxxxxxx xxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxx xxxxxxxxxx xxxxxxxxxx
.xxxx xxxxxxx xxxxxxxxxx



xxxxxx xxxxx xxxxxx xxxxxxxx xxx xxxxxx xxxxxx :xxxxxxx xxxxxxxxxx xxxxxxxxxx (2018)
New Scientist ~



:xxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxx xxxxxxxxxx

xxxxxxx xxx xxx xxxxxxxxxx xxxxxxxxxx xxx xxxxxxxxxx xxxxxxxxxx
xxxxxx xxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx
xxxx xxxxxx xxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx .xxx xxx xxxxxxxxxx xxx
x xxxxxx xxxxxxxxxx xxx xxxxxxxxxx xxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx
.xxxx xxxxxx xxxxxxxxxx xxxxxxxx

xxxxxxx xxxxx xxxxxxxxxx xxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx
xxxxxxx xxx xxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx
xx xxxxxxxxxx xxxxxxxxxx xxx xxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxx xxxxxxxxxx
.< xxxxxxxxxx xxxxxxxxxx > xxx xxxxxxxxxx

XXXXXXXX XX XX XXXXXX XXXXXX XX XXXXXX XXXX XXXX XXXXXX XXXXXX XXXX XXXX
XXXXXXXX XXXXXX XX XXXXXX XX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX
XXXXXXXX XXXXXX XXXXXX XX XXXXXX XXXXXX XXXX XX XXXXXX XXXX XXXX .XXXXXXXX
XXXXXXXX XXXXXX XXXX

XX XXXXXX XXXX XXXXXX XX XXXX <XXXX> XXXXXX XXXX XXXX XXXX
XXXXXXXX XXXXXX XXXX XXXX XX XXXX XXXXXX XXXX XX .XXXX XXXXXX XXXXXX
XXXXXXXX XXXX XX XXXX XXXX XXXXXX XX XXXX XXXXXX XXXXXX XXXXXX XXXXXX
XX XXXX XXXXXX XXXX XXXX XX XXXXXX XXXXXX XXXX XXXX XXXXXX XXXXXX
XXXXXXXX XXXXXX XXXX

XXXXXXXX XX XXXX .XXXX XXXXXX XXXXXX XXXX XXXXXX XXXX XXX XXXXXX
XXXXXXXX XXXXXX X XXXX XXXXXX XXXXXX XXXXXX XXXXXX <XXXX> XXXX XXXX
XXXXXXXX XXXXXX XX (<<XXXX XXX XXXXXX XXXX> XXXX) XXXXXX XXXXXX
XXXXXXXX XXXXXX

XXXXXXXX XXXXXX XXXX XXXXXX XXXX XXX XXX XXXXXX XXXXXX XXXXXX XXXXXX
XXXXXXXX XXXXXX XXXXXX XX XX XXXXXX XXXX XXXXXX XXXX XX .XXXX (XXXX)
XXXXXXXX > XX XXXXXX XX XXXX XXXXXX XXXX XX XXXXXX X XXXXXX XXXXXX
XXXXXXXX <<XXXX

:XXXX XXXXXX Hereandnow 🌿 XXXXX

XX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX
XXXXXXXX XXXXXX XXX XXXXXX XXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX
XXXXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX

XXX XXXXXX XX XXXX XXXX XX XXXXXX XXXXXX XXXXXX XXXXXX XXX XXXX
XXXXXXXX XXXX XXXX .XXXXXXXX XX XXXXXX XXXXXX XXXXXX XXXXXX XXX XXXXXX
XXXXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXX .XXXX XXXXXX XXXXXX XXX
XXXXXXXX XXXXXX XXXX

XX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXX
XXXXXXXX XX XXXX XXXXXX XXXXXX XXXXXX XXX XXXXXX XX XXXXXX XXXXXX
XXXXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXX

:XXXX XXXXXX XXXXXX XXX XXXXXX XXXXXX


XXX XXXX XX XXXXXX XXXXXX XXXXXX XXXXXX XXX XXXXXX XX ...XXXX
XXXXXXXX XXXXXX XXXXXX XX XXXXXX XXXXXX XXXXXX XXXXXX 'XXXXXXXX
XX XXXXXX XXXXXX XX XXXXXX XXX XXXXXX [XXXXXXXX XXXXXX XXXXXX]
XXXXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXX XXXXXX XXXX .XXXX XXXX
XXXXXXXX XXXXXX XXXXXX XXXXXX XXX XXXXXX XXXXXX XXXXXX

CosmicPhilosophy.org

[/https://ir.cosmicphilosophy.org](https://ir.cosmicphilosophy.org)

XXXXXXXXXXXXXXXXXXXXXXXXXXXX

:XX XXXXX XXXXXXXXXXXXX

- ▶ XXXXX XXXXX XXXXX XX XX XXXXXXXXXXXXX :GMODebate.org 
XX XX XXXXXXXXXXXXX >> XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXX XXXXX XXXXXXX X <<XXX XX>> XXXXXX X<<XXXXXXXX
.XXXXXXXXXX XXXXX XXXXXXX