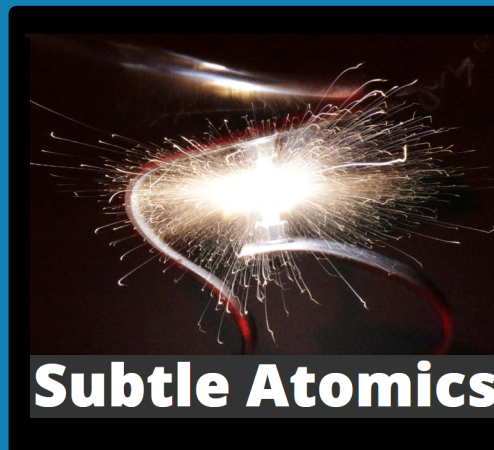
Engineering Dense Hydrogen Based Energy Systems

Simon Brink
Environmental Engineer

World Engineers Convention, November 2019



Climate Emergency

"…one third of the Great Barrier Reef is now dead"

Prof. Terry Hughes, 2016

Photograph source: abc.net.au

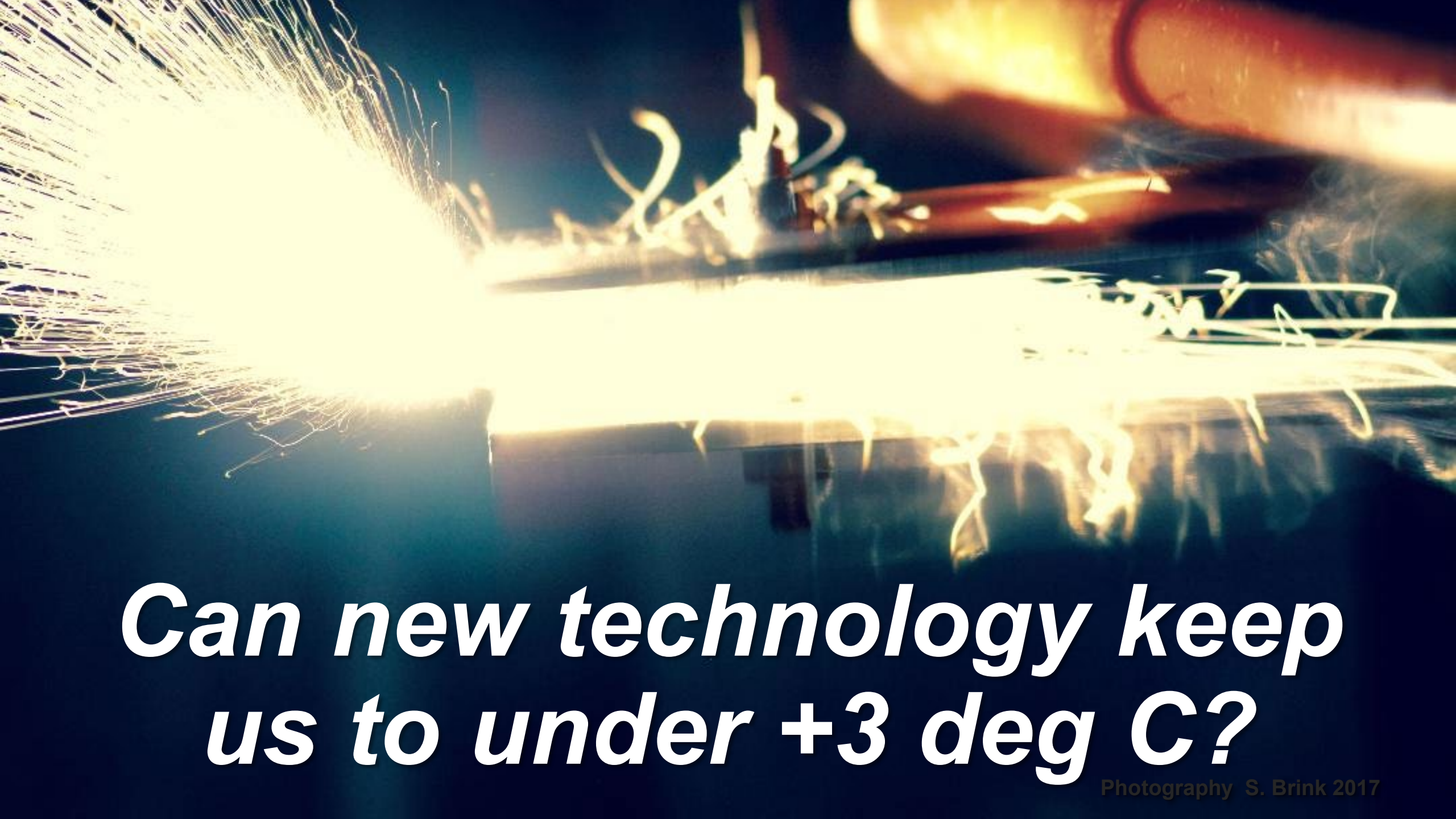
The Real Climate Challenge

Now: 1.2°C above pre-industrial (~1700)

Ocean, ice & geological lag +0.6°C

Sulphate emission cooling +0.5°C

Already "locked in" to >2°C


Can new technology keep us to under +3 deg C?
Photography S. Brink 2017

New Directions in Physics

Background energy

Fusion doesn't power the sun

Toroidal nuclear physics

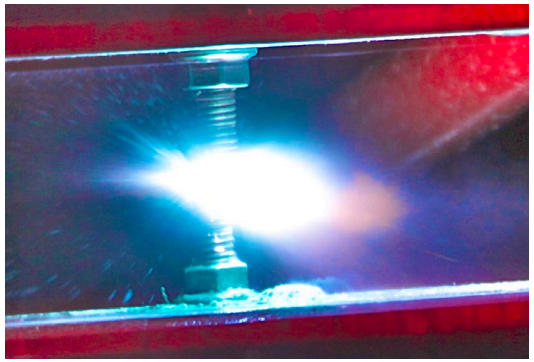
Electrons are not points

Expanding earth theory

Black holes as super-nuclei

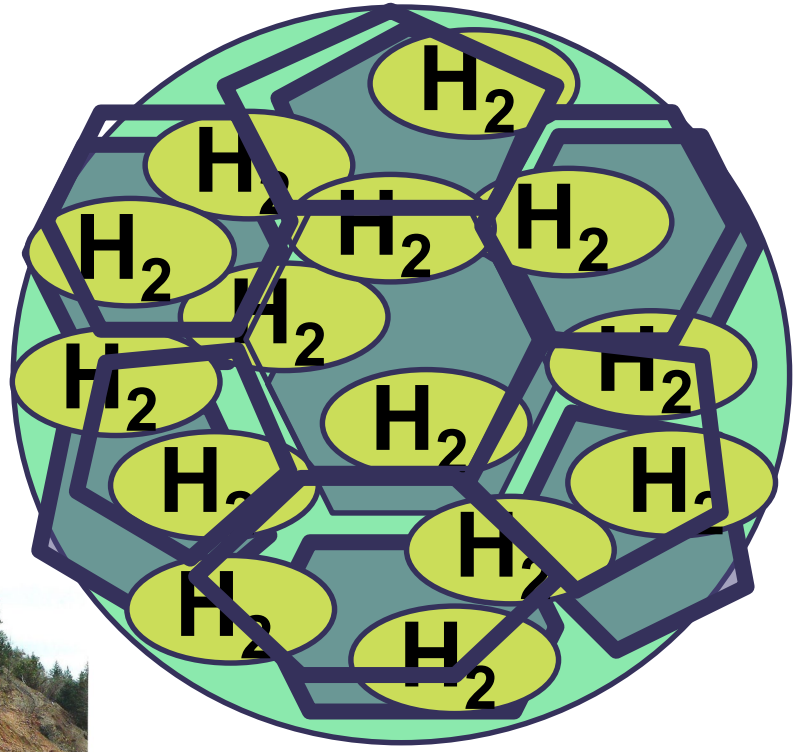
Dense Hydrogen – What is it?

Extreme ultraviolet state transitions



Excess heat & transmutation observations

Geological dense hydrogen



$H_2(n=\sim 1/4)$

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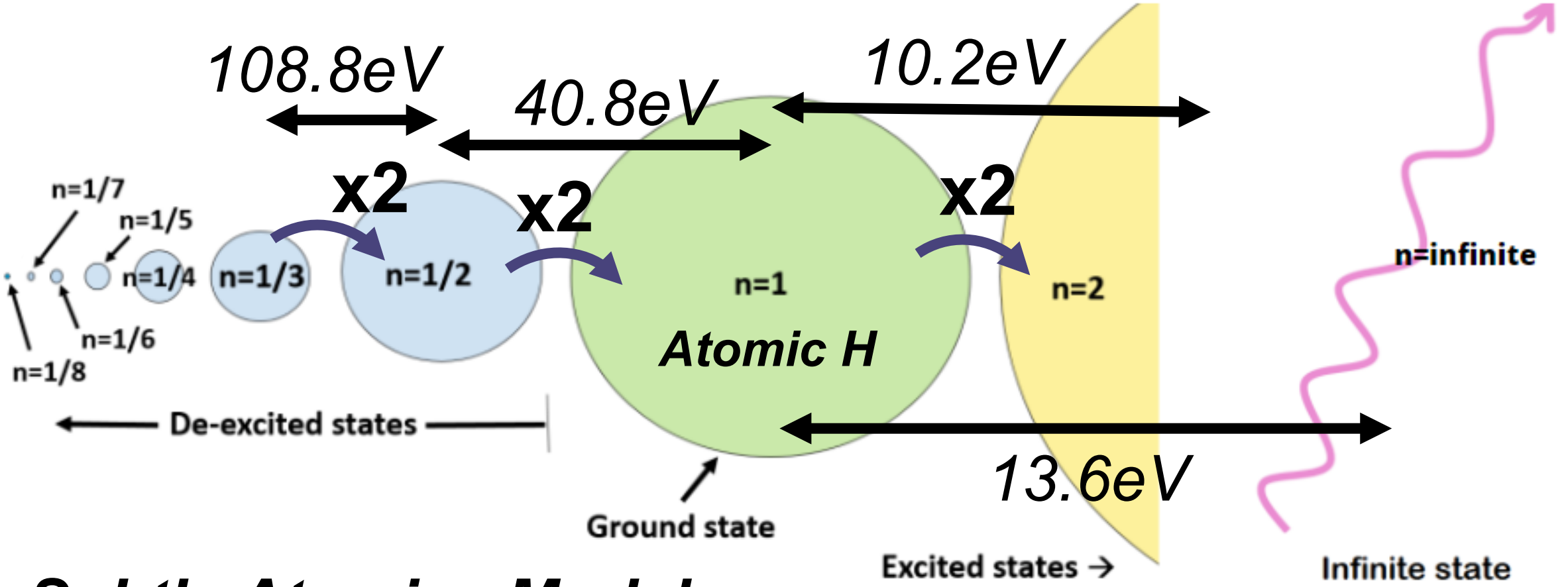
Subtle Atomics

Dense Atomic Hydrogen Physics



Subtle Atomics Model

Changing the Rydberg Model

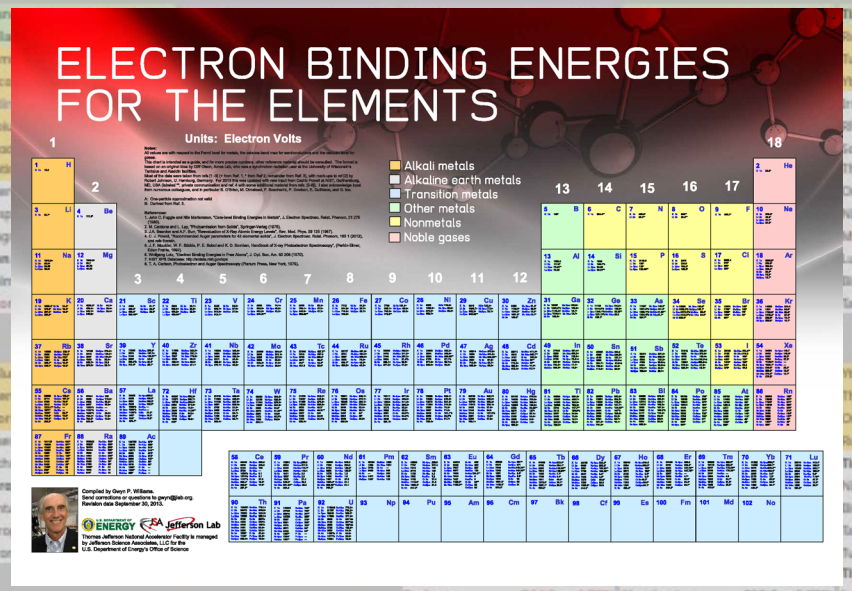
New size relationship:

Rydberg: Linear, based on “ground state”

Subtle Atomics: Exponential, 2x previous state

Dense Atomic Hydrogen Catalysts

Cu Pr Pd,Yb W Te,Ne,Ni La,As Os



H(n=∞) -> H(n<1)

"explains 30+ years of excess heat and transmutation observations from electro-chemical LENR"

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S. Brink | November 2019

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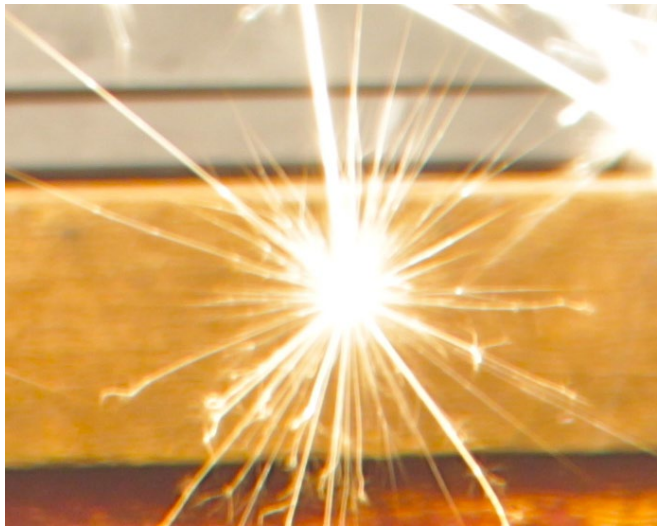
Dense Hydrogen Technologies

Elemental transmutation

Advanced materials



Nuclear waste deactivation

New Energy Technologies

Super-Chemical

Low Energy Nuclear

Sub-Nuclear

Super-Chemical Reactions

H(n=1/3) catalyst: Copper – M_i3s = 122.5 eV/c^2

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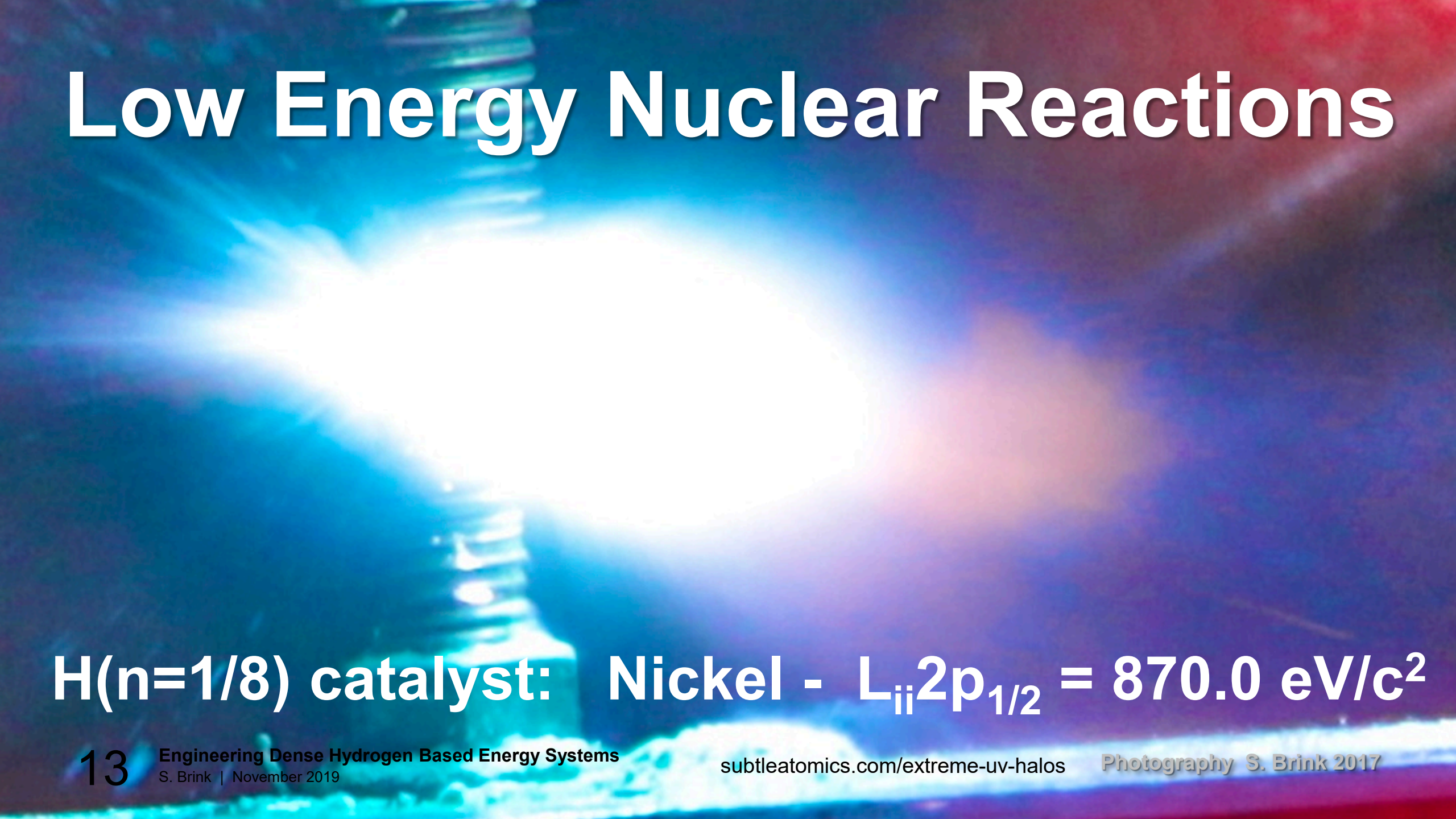
Photography S. Brink 2017

Low Energy Nuclear Reactions



H(n=1/8) catalyst: Nickel - $L_{ii}2p_{1/2}$ = 870.0 eV/c^2

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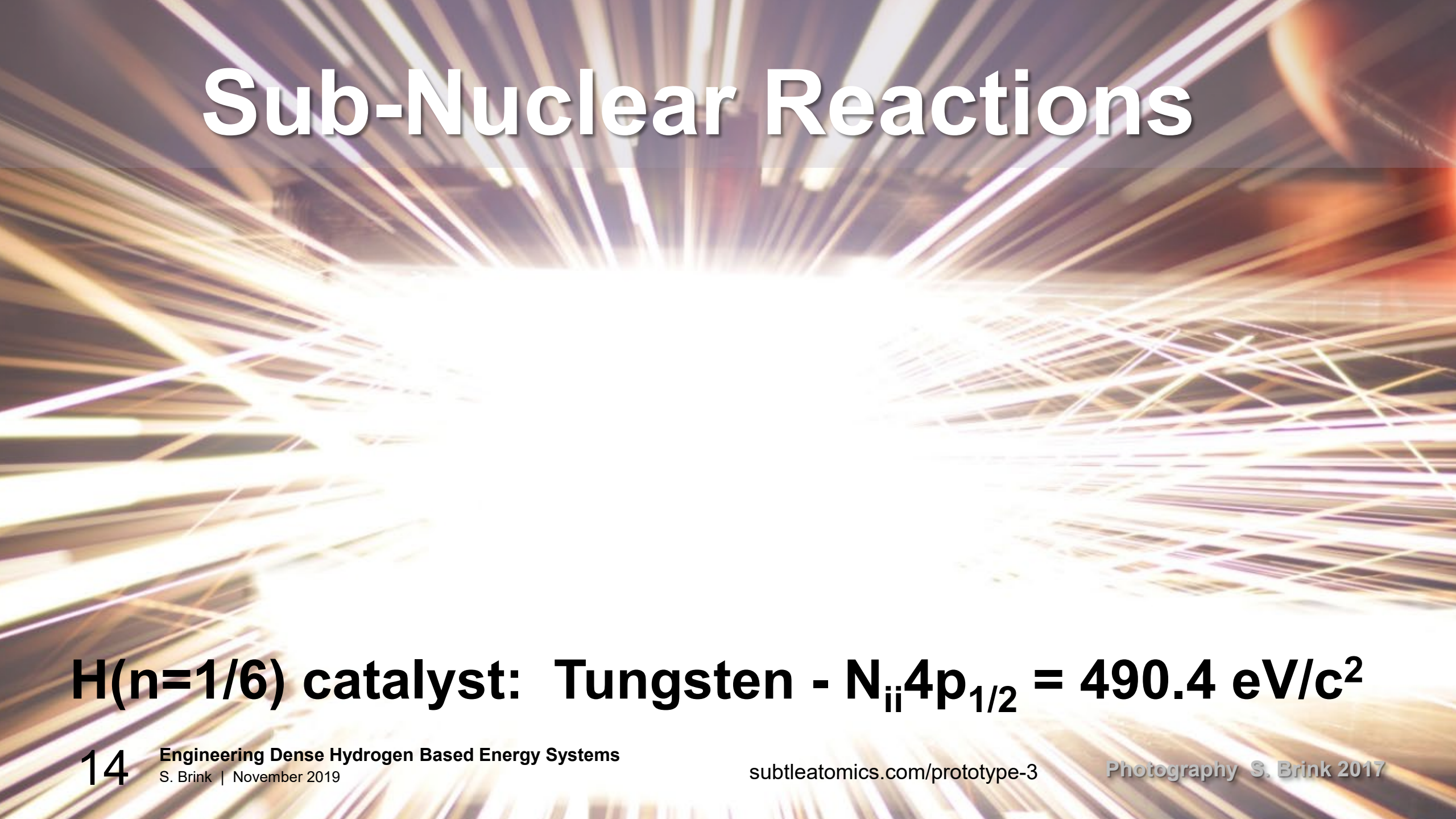
Sub-Nuclear Reactions



H(n=1/6) catalyst: Tungsten - $N_{ii}4p_{1/2}$ = 490.4 eV/c^2

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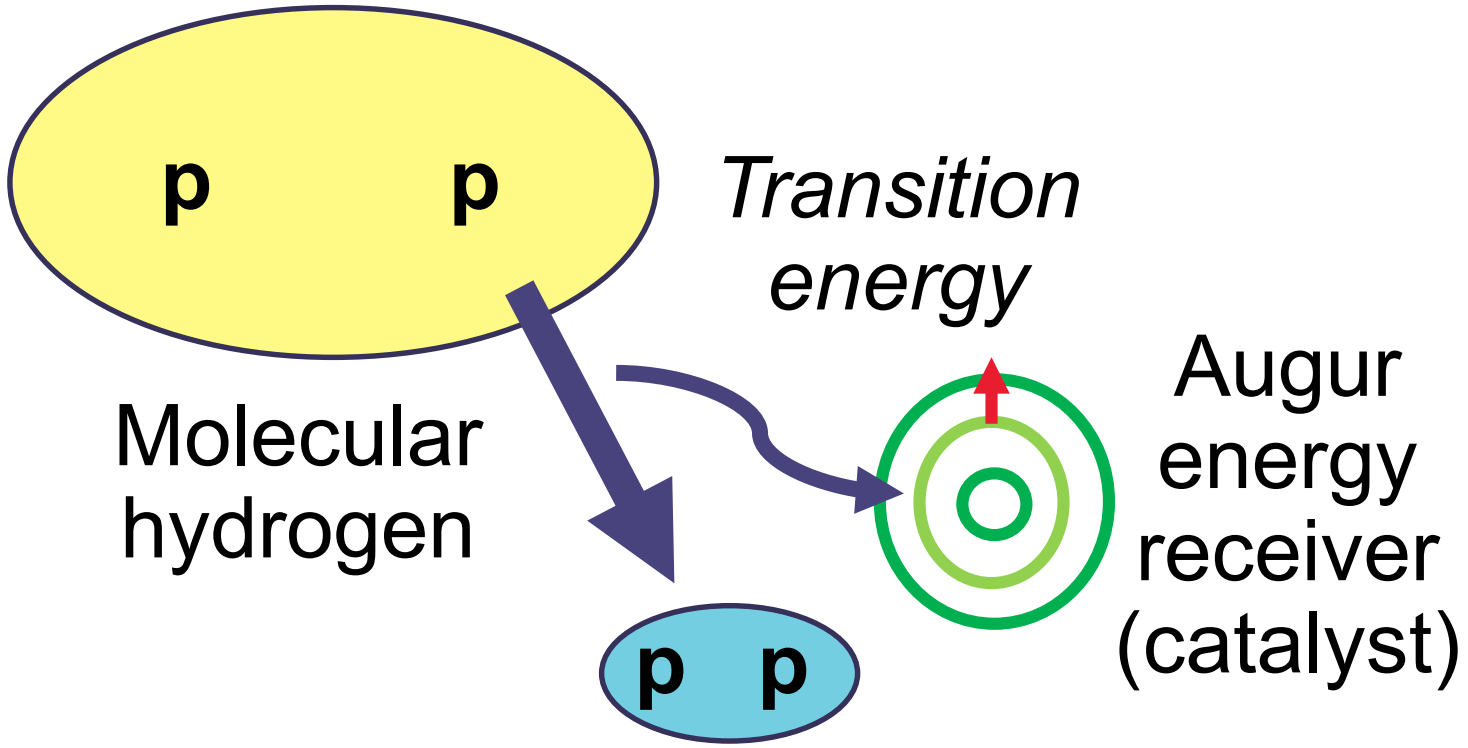
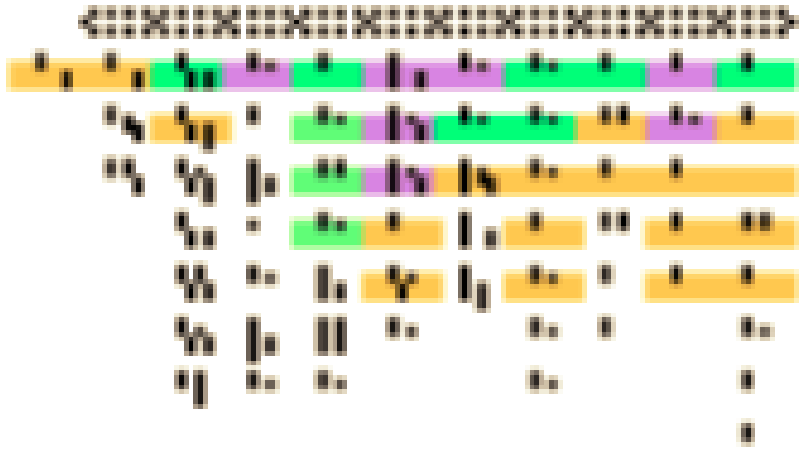
Dense Molecular H_2 Systems





"The new frontier"

Dense Molecular H_2 Technologies

Low energy chemical production of micro-diamonds

Carbon

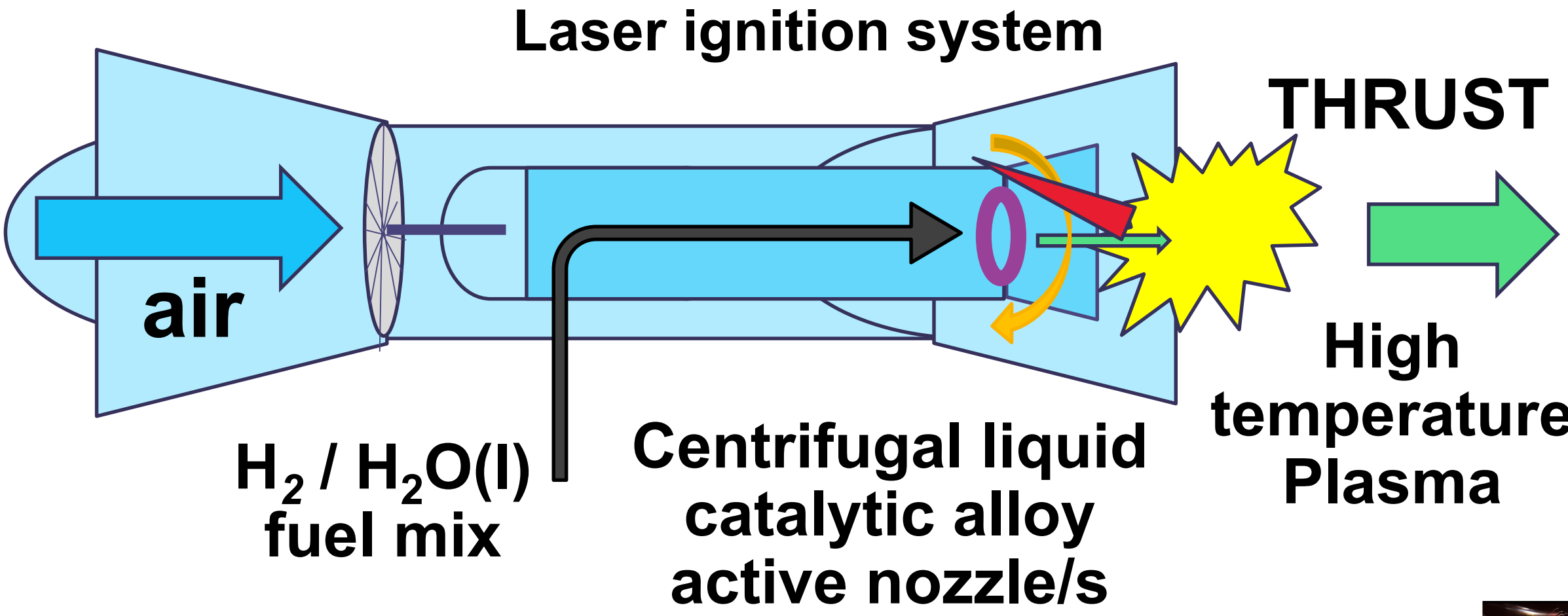
Oxygen Catalysed Dense Molecular H_2

Oxygen, K 1s, first augur energy

Infrared laser and/or secondary catalyst

$$H_2(n=1) \dashrightarrow H_2(n=4)$$

Jet Propulsion System - Subtle Atomics



Extension to Expanded Hydrogen

Subtle Atomics Gas Model:

"Atomic hydrogen size varies with pressure in the gas phase"

At atmospheric pressure
H gas can expand to: ***n=4***

Intergalactic Atomic Hydrogen

Intergalactic medium identified as:

~H(n=24 to 31),

Subtle Atomics, 2019

Warm to hot neutral medium transition energies consistent with Cosmic Microwave Background radiation!!!

Electron State	Rydberg Variable	Ionisation Energy	Excitation Energy n to n+1	Radius	Example
	n	eV/mc^2	eV/mc^2	metres	
	38	0.00942223	0.0094222	7.270521	
	37	0.00993842	0.0005162	3.635260	
	36	0.01049822	0.0005598	1.817630	
	35	0.01110669	0.0006085	0.908815	*Cosmic Microwave Background source*
	34	0.01176963	0.0006629	0.454408	*< ------ (dEν/dν peak)*
	33	0.01249375	0.0007241	0.227204	
	32	0.01328681	0.0007931	0.113602	
Interstellar Medium	31	0.01415785	0.0008710	0.056801	**Hot Neutral Medium (HMN)**
	30	0.01511744	0.0009596	0.028400	*Cosmic Microwave Background source*
	29	0.01617799	0.0010606	0.014200	*< ----- (dEλ/dλ peak)*
	28	0.01735420	0.0011762	0.007100	**Warm Neutral Medium (WMN)**
	27	0.0186635[illegible]	[illegible]093	[illegible].003550	
	26	[illegible]0201267[illegible]	0.00[illegible]633	[illegible]001775	
	[illegible]	[illegible]0217691[illegible]	[illegible]	[illegible]088	
	[illegible]	[illegible]362099	0.00[illegible]9	[illegible]044	**Co[illegible] Neutr[illegible] Medium (CNM)**
	[illegible]	[illegible]965	0.0[illegible]87	[illegible]022	
	22	[illegible]0281[illegible]	[illegible]23913	[illegible]	
	[illegible]	[illegible].030851[illegible]	[illegible]027410	0.000055	
	20	0.03401423	[illegible]0031623	0.000028	

Big Bang Theory

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Subtle Atomics

For more information:

subtleatomics.com

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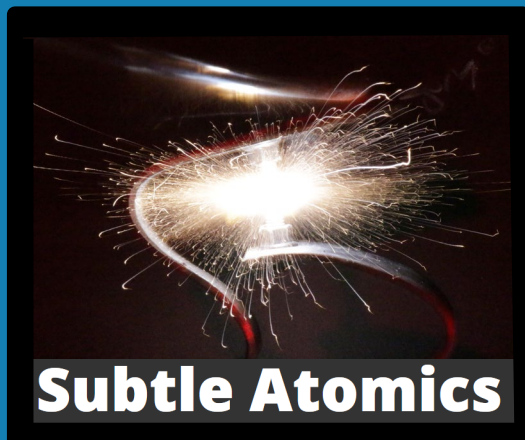
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