

# NUCLEAR NETWORK AFRICA

## THE WORLD OF NUCLEAR

**IS NUCLEAR RADIATION REALLY SCARY?**

DR DAVID OTWOMA

**LIES, DAMNED LIES AND STATISTICS; THE TRUTH**

THE DIFFERENCE BETWEEN STATISTICS AND **STATISTICS**

DR JOHN RANDALL

AND MORE.....



PICTURE CREDIT: ADRI SENEKAL DEWET

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## FROM THE EDITOR

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Welcome to the 5th edition of Nuclear Network Africa **N<sup>2</sup>A**!

As we close out 2024, this issue takes a closer look at nuclear radiation, demystifying the science, unpacking the statistics, and exploring its role in a sustainable energy future.

The world of nuclear energy continues to evolve, and Africa stands at a pivotal point in its journey toward embracing this vital technology. At **N<sup>2</sup>A**, we remain committed to delivering compelling truths and critical insights about the benefits of nuclear energy.

Our mission is to empower you with the knowledge and arguments needed to champion pro-nuclear advancements on the continent.

As we celebrate the festive season, the **N<sup>2</sup>A** Editorial Team extends our warmest wishes for a Merry Christmas and a Happy New Year. We are deeply grateful to our readers and contributors who have made this year remarkable.

Looking ahead to 2025, we are excited to bring you more thought-provoking discussions, inspiring stories, and educational content that underscores nuclear energy's potential to transform Africa's energy landscape sustainably and equitably.

Thank you for being part of this journey.

Together, let's shape a future powered by the promise of nuclear energy.

Warm regards,

**The N<sup>2</sup>A Editorial Team**



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# N<sup>2</sup>A VOLUNTARY CONTRIBUTOR PROGRAM

The N<sup>2</sup>A Voluntary Contributor Program aims to empower aspiring and passionate young people to voice their pro-nuclear sentiments through creative expression. This initiative provides a platform for contributors to showcase their skills while fostering positive thinking about nuclear power's role in shaping their lives and securing sustainable energy for future generations. By participating, these young people contribute to a broader narrative that highlights nuclear energy's benefits and its potential to positively impact communities and the environment.

## Celebrating Lizzon-Vanique De Villiers:

A Creative Force Behind N<sup>2</sup>A's Festive Artwork (page 2 - N<sup>2</sup>A Highlights)

At just 21, Lizzon-Vanique De Villiers is a rising star in the world of art and design, blending her creative talents with her passion for innovation. Her latest contribution to the N<sup>2</sup>A Voluntary Contributor Program is a delightful and culturally rich artwork titled "Ho Ho Ho, Hamba Kahle".

This playful piece reimagines Father Christmas as he sets off on his gift-giving journey across a vibrant South African landscape, accompanied by springbok instead of reindeer. The title cleverly merges Santa's cheerful "Ho ho ho" with the Zulu phrase Hamba Kahle, meaning "go well" or "safe travels," capturing the festive spirit with a distinctly South African twist. Through this work, Lizzon celebrates the beauty and pride of a South African Christmas, bringing together tradition, culture, and joy.

With proficiencies in tools like Blender, Krita, and Photoshop, Lizzon's expertise spans a wide range of creative mediums. From 2D and 3D animation to digital art and traditional illustration, she excels in blending technology and artistry to craft compelling visual stories. Her work is further enriched by her skills in web development, video editing, and even scriptwriting, making her a versatile creator.

Lizzon's artistic philosophy is as inspiring as her work. She sees life as a canvas, painting it daily with the strokes of her diverse skills and experiences. Her creativity, coupled with her dedication to technology and design, embodies the innovative spirit that the N<sup>2</sup>A program seeks to foster. Follow Lizzon's journey and explore her evolving portfolio on platforms like Instagram (@lvdv4j), LinkedIn, and Twitch (SomeScribbles). Through her art and determination, she's crafting not only masterpieces but also a brighter, more imaginative future.



**To Join our Voluntary Contributors Team and join the voice for the future, submit your list of skills and a motivation to:**

**[heather@stratekglobal.com](mailto:heather@stratekglobal.com)**





# THINK ABOUT IT!

## EINSTEIN AND HOW TO FRY AN EGG

DURING AN INTERVIEW, A JOURNALIST ASKED EINSTEIN IF HE COULD EXPLAIN HIS PRINCIPLE OF RELATIVITY TO HIM, IN A SIMPLE WAY... SO THAT HE COULD UNDERSTAND IT.

EINSTEIN REPLIED:  
"CAN YOU EXPLAIN TO ME HOW TO FRY AN EGG?"

THE JOURNALIST LOOKED AT HIM STRANGELY AND REPLIED:  
"WELL, YES, YES I CAN."

TO WHICH EINSTEIN REPLIED:  
"WELL, DO IT, BUT IMAGINING THAT I DON'T KNOW WHAT AN EGG IS, OR A FRYING PAN, OR OIL, OR FIRE."



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# IS NUCLEAR RADIATION REALLY SCARY?

DR DAVID OTWOMA

In nuclear power processes, how safe is nuclear radiation?

Very safe, I would say. Let me demonstrate.

How do nuclear power processes tick? Energy from the core of an atom is released. Atoms are composed of three particles, namely; protons, neutrons, and electrons. The atom's core, called the nucleus, contains protons and neutrons, and this nucleus is surrounded by electrons. Protons are positively charged electrically, while electrons carry a negative electrical charge. Neutrons have no charge. Enormous energy is present in the bonds that hold the nucleus together. This nuclear energy can be released when those bonds are broken, as in nuclear fission, where the nucleus of the atom is split apart. This releases a huge amount of energy. This energy can be used to generate electricity, when the heat produced from the energy release is used to boil water which turns to steam, which then drives turbines.

All commercial nuclear power plants use nuclear fission, and most nuclear power plants use uranium atoms, while a few use thorium. During nuclear fission, a neutron collides with a uranium atom and splits it, releasing a large amount of energy in the form of heat and radiation.

About 85% of the energy released initially is the kinetic energy of the fission fragments, which scatter as the nucleus splits. However, in solid fuel they can only travel a microscopic distance, so their energy becomes converted into heat. The balance of the energy comes from gamma rays emitted during, or immediately following, the fission process, and from the kinetic energy of the neutrons.

Gamma rays are a form of electromagnetic radiation which interacts with matter, causing it to become ionised. The process of unstable fission products attempting to become stable again, is called radioactive decay.



About 6% of the heat generated in the reactor core originates from the radioactive decay of fission products, and from transuranic elements formed by neutron capture, mostly the former. Even when the reactor is shut down, this heat generation from radioactive decay continues after fission stops, and therefore safety measures have to be included, not only for while the reactor is operating, but also for a shut-down reactor. It is this radioactive decay which makes used fuel generate heat, and therefore needs continuous cooling for some time. This residual 'decay heat' was very publicly demonstrated in the Fukushima accident when cooling was lost an hour after shutdown, and the fuel was still producing about 1.5% of its full-power heat. That was enough to melt the fuel, leading to the infamous 'core meltdown.'

Even after one year, typical used fuel generates about 10 kW of decay heat per ton, decreasing to about 1 kW/t after ten years.

So, in nuclear power processes, how safe is nuclear radiation?

Human beings and the environment are subjected to naturally-occurring radioactive materials all of the time. We are permanently bathed in a radioactive background consisting of radiation coming from the ground upwards, and coming from outer space downwards. **CONTINUED ON PG7**

**N<sup>2</sup>A**



## CONT.... FROM PG 6

**A**s of May 2023, there are about 440 nuclear reactors operating worldwide, producing electricity. The uranium and thorium atoms used for the fission reaction are contained within engineering barriers. Even when minor accidents occur no nuclear material is released to harm people or the environment.

**O**f all the nuclear power accidents and incidents, only two, those of the Chernobyl and Fukushima accidents, resulted in radiation doses to the public greater than those resulting from the exposure to natural sources. The Fukushima accident resulted in some radiation exposure to workers at the plant, but not such as to threaten their health. The Chernobyl accident destroyed one of the four reactors, killing 30 operators and firemen within three months. Other incidents, and one 'accident,' have been completely confined to the plants without any harm to people or the environment.

**M**ost of the serious radiological injuries and deaths that occur each year (anything between 2 to 4 deaths and many more exposures above regulatory limits) are the result of significant uncontrolled radiation sources, such as abandoned medical or industrial equipment. There have also been a number of accidents in experimental reactors, and in one military plutonium-producing reactor, but none of these resulted in loss of life outside the actual plant, or long-term environmental contamination.

**I**n nuclear plants the safety of operating staff is a prime concern. Radiation exposure is minimized, by using remote handling equipment for many operations in the core of the reactor. Other controls include physical shielding, and limiting the time workers spend in areas with significant radiation levels. There is also continuous monitoring of individual doses and of the work environment, to ensure very low radiation exposures, compared to chemical or other exposures in other industries.

**T**he fearful portrayal of nuclear radiation in the daily press is mostly well and truly exaggerated. Nuclear radiation is not dangerous, if it is treated with respect, like you would treat dangerous chemicals in any other industry. **CONTINUED ON PG8**



THIS IS SUNSET AT BRENTON ON SEA, WESTERN CAPE.



**CONT.... FROM PG 7**

*Dr David Otwoma is now a lecturer in the Department of Physics at the University of Nairobi.*

*He is currently serving as the President of the Nuclear Society of Kenya.*

*He holds a PhD in Radiation Physics, MSc in Nuclear Science, BSc in Physics. He is Former Chairman of the Eastern Africa Association for Radiation Protection where he was a founding member, from 1999. Previously he was Secretary (Nuclear) in the Ministry of Energy and Petroleum, where from 2011 to 2013 he was seconded to the Nuclear Electricity Project.*

*He was also a Nuclear Safeguards Inspector at the International Atomic Energy Agency (IAEA) in Vienna Austria (1999-2006).*

*His impressive portfolio of awards includes the Nobel Prize for Peace for the year 2005 as IAEA SG staff, shared with the IAEA Director General, Dr Mohamed El Baradei. David was awarded the Kenya National Commission for Science, Technology and Innovation award in 2013 in recognition of research contributions on both national and international levels to the R&D in Radiation Protection Dosimetry.*

*In 2016 he was appointed National Coordinator of the Regional Networking of African National Nuclear Institutions (RENANNI).*



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# THE CHRISTMAS SPLIT

In December 1938, over the Christmas holidays, physicists Lise Meitner and Otto Frisch made a startling discovery that would immediately revolutionize nuclear physics, and later lead to the atomic bomb. They were trying to explain a puzzling finding made by nuclear chemist Otto Hahn in Berlin.

Meitner and Frisch realized that something previously thought impossible had actually happened. A Uranium nucleus had split in two.

Lise Meitner had studied physics at the University of Vienna, receiving a doctorate in 1906. Meitner was shy, but soon became a friend and collaborator of chemist Otto Hahn. In 1912 the Kaiser Wilhelm Institute for chemistry was established, and she obtained a position there. During World War 1 Meitner volunteered as an x-ray nurse in the Austrian army. Upon returning to Berlin she was made head of a physics section at the Kaiser Wilhelm Institute, where she did research in nuclear physics.

In 1932 the Neutron was discovered and scientists realized that it would make a good probe to use on the atomic nucleus. In 1934 Enrico Fermi bombarded Uranium with Neutrons and produced what he thought were the first elements heavier than Uranium. Most scientists thought that hitting a large nucleus like Uranium with a Neutron could only induce small changes in the number of Neutrons or Protons. However, one chemist, Ida Noddack, pointed out that Fermi hadn't ruled out the possibility that the Uranium might actually have broken up into lighter elements. Most scientists thought that this was a rather crazy idea, and even Noddack did not follow it up.

Following Fermi's work, Meitner and Hahn, along with chemist Fritz Strassmann, also began bombarding Uranium and other elements with Neutrons...to see what would happen. Hahn carried out the careful chemical analysis while Meitner, the physicist, explained the nuclear processes involved.

In July 1938 Meitner was forced to flee from the Nazis. She kept up her correspondence with Hahn and continued to advise him about their joint research.

In December 1938, Hahn and Strassmann, continued their experiments bombarding uranium with neutrons. They found what appeared to be Barium among the 'broken' Uranium atoms. They couldn't explain it, since it was thought that a tiny Neutron couldn't possibly cause the nucleus to crack in two, to produce much lighter elements. Hahn sent a letter to Meitner describing the puzzling finding.

Over the Christmas holiday, Meitner had a visit from her nephew, Otto Frisch, a physicist who worked in Copenhagen at Niels Bohr's institute. Meitner shared Hahn's letter with Frisch. They knew that Hahn was a good chemist and had not made a mistake, but the results didn't make sense. They went for a walk in the snow to talk about the matter, Frisch on skis, Meitner keeping up on foot. They stopped at a tree stump to do some calculations. Meitner suggested that they view the nucleus like a liquid drop, following a model that had been proposed earlier by the Russian physicist George Gamow, and then further promoted by Bohr. Frisch and Meitner figured that after the split, the two drops would be driven apart by their mutual electric repulsion, at a very high energy. But where would that energy come from? Meitner determined that the two resulting nuclei together would total less mass than the original Uranium nucleus.

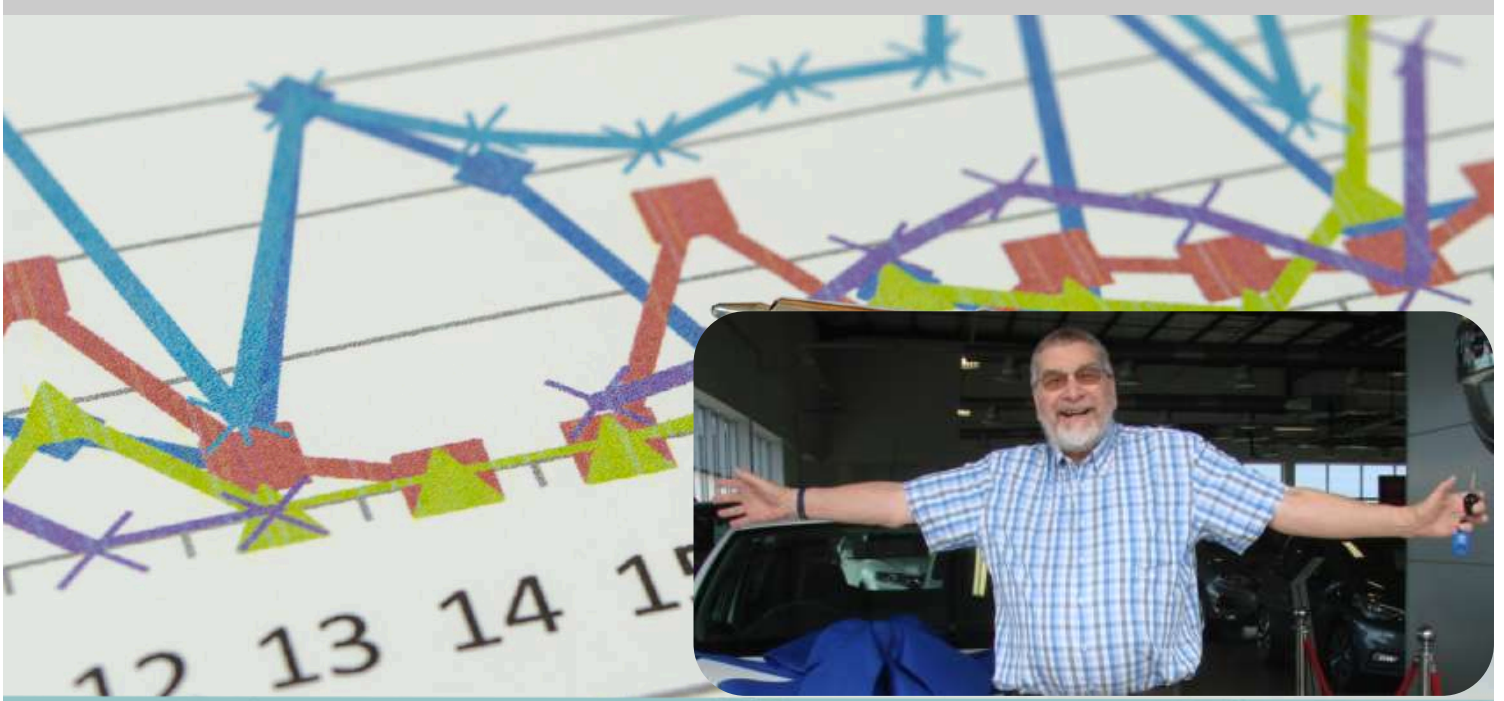
When plugged into Einstein's famous formula,  $E=mc^2$ , everything fitted.

Frisch left Sweden after Christmas dinner. Having made the initial breakthrough, he and Meitner collaborated by long-distance telephone. Frisch talked briefly with Bohr, who then carried the news of the discovery of fission to America, where it met with immediate interest.

Frisch named the new nuclear process "fission" after learning that the term "binary fission" was used by biologists to describe cell division.

# THE DIFFERENCE BETWEEN STATISTICS AND **STATISTICS** LIES, DAMNED LIES AND STATISTICS; THE TRUTH

DR JOHN RANDALL



It is common, perhaps universal, to believe that the famous line “There are lies, damned lies and statistics” refers to the subject, science, of (Applied) Statistics. One need only think carefully as to how such a phrase would be used by a man in the street, even one with a mythological ability to see far into the future, to suspect that the line refers to statistics, not Statistics.

## What’s the difference?

Well, statistics are facts, truths, realities. For example, I might tell you that South Africa today has a population of over 60 million people. I googled “population of South Africa in 2024” and this display appeared.

**CONTINUED ON PG 11**

64,007,187

Population of South Africa (2024 and historical)

Year	Population
2024	64,007,187
2023	63,212,384
2022	62,378,410
2020	60,562,381

9 more rows



**CONT.... FROM PG 10**

Really? Is it 187, on the dot, not 186 or 188? When was that? On the 01/01/2024 or say 30/10/2024? That's why I said: "over 60 million". Having looked up the "official" number, I'd be happy to modify my statement to "over 64 million". That's an example of a statistic. It's a piece of information which is useful to some of the people, some of the time. To see what I mean by that, consider breaking South Africa's population down by region, say by province. Googling "South Africa population by province" and clicking on an expansion link ("7 more rows") I was redirected to a page which includes this display:

Rank	Province	Census 2011		2016 community survey		Census 2022	
		Population	Percentage	Population	Percentage	Population	Percentage
1	Gauteng	12,272,263	23.7	13,399,724	24.1	15,099,422	24.3
2	KwaZulu-Natal	10,267,300	19.8	11,065,240	19.9	12,423,907	20.0
3	Western Cape	5,822,734	11.2	6,279,730	11.3	7,433,019	12.0
4	Eastern Cape	6,562,053	12.7	6,996,976	12.6	7,230,204	11.6
5	Limpopo	5,404,868	10.4	5,799,090	10.4	6,572,720	10.6
6	Mpumalanga	4,039,939	7.8	4,335,964	7.8	5,143,324	8.3
7	North West	3,509,953	6.8	3,748,435	6.7	3,804,548	6.1
8	Free State	2,745,590	5.3	2,834,714	5.1	2,964,412	4.8
9	Northern Cape	1,145,861	2.2	1,193,780	2.1	1,355,946	2.2
<b>South Africa</b>		<b>51,770,561</b>	<b>100.0</b>	<b>55,653,654</b>	<b>100.0</b>	<b>62,027,503</b>	<b>100.0</b>

If I were the administrator of State funds allocated for (say) public hospitals, I'd be allocating roughly 10 times as much to Gauteng as to the Northern Cape. That tells you what statistics are and why they are useful. So, let me first tell you some statistics, then I'll tell you why they are useful...to me, in this discussion.

**The statistics**

Mark Twain, the pen name of Samuel Langhorne Clemens, was born in 1835 and died in 1910. Shortly before his death, in 1907, he published this quote: "Figures often beguile me, particularly when I have the arranging of them myself; in which case the remark attributed to Disraeli would often apply with justice and force: 'There are three kinds of lies: lies, damned lies, and statistics'.

Twain is attributing his quote to Benjamin Disraeli- who lived from 1804 to 1881 ...and, as Prime Minister of the United Kingdom, he would have encountered statistics similar to the ones I display above for South Africa. Perhaps it was the number of bales of raw cotton imported to the UK from India in 1870. Perhaps that number was 64,007,187 and perhaps Disraeli asked the same question I asked: "Really?! Is it 187, on the dot, not 186 or 188?!".



**CONTINUED ON PG 12**

**CONT.... FROM PG 11**

Unfortunately, there is no trace of this quote in Disraeli's writings, so most agree: Mark Twain is the author of the quote. However:

What was Mark Twain suggesting that Disraeli was thinking about, when (in Twain's imagination) Disraeli was objecting to a fact given to him while discharging his duties as Prime Minister?

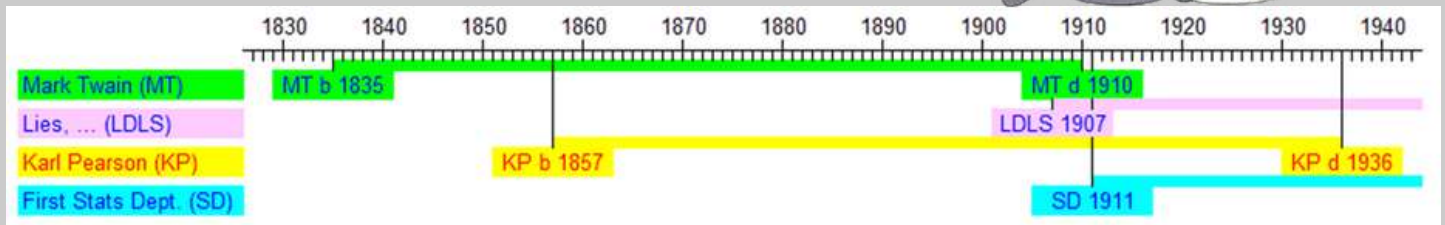
To address that question, we need some more statistics.

Karl Pearson was born in 1857... in Mark Twain's 22nd year. He was still alive in 1907 when Mark Twain published the quote of interest, and he was alive in 1910 when Mark Twain died. Karl died in 1936, after a life filled with astonishing achievements. One of these, in 1911, a year after Mark Twain died, was to establish the first university Statistics department.

So, the distinction between "statistics" (descriptive numbers) and "Statistics" (a label for a branch of Science) could not have been made before 1911. It certainly could not have been made in 1907. Disraeli was very definitely not referring to "Statistics", even if only in Twain's imagination, in (say) 1870 because at the time only "statistics" existed, "Statistics" was only to become official some 40 years later (for Disraeli) or some four years later (for Twain).

**Using statistics to defend Statistics**

Using statistics to discredit a slur on Statistics is very satisfying. Here is my work in a graphic.



Dr John Randall initially obtained an MSc in Genetics and Poultry Science from the University of Stellenbosch, since his plan was to be a Poultry Breeder on the family farm. But he developed an interest in Biometrics and obtained an MS in Statistics and Biometry from Cornell University. For 25 years he followed this path. Then he became a Systems Developer for the next 20 years and obtained a PhD in Biometry from Stellenbosch.

His first personal computer was an HP-85, bought in 1980, and two of his programs were in the top 10 of this PC's international library.

When he was a boy, on the family farm, the Xhosa farmworkers gave him the nickname of Vundla, the Xhosa language name for the Cape Hare:

He said that he was given the nickname "because I was to be found, asleep, by the side of the road". He says that: "Apparently, I'd set out from home, walk until I got tired, then lie down and take a nap. When one walks in the veld in the Eastern Cape one can disturb a Vundla (they're nocturnal) and it will jump up and race away."





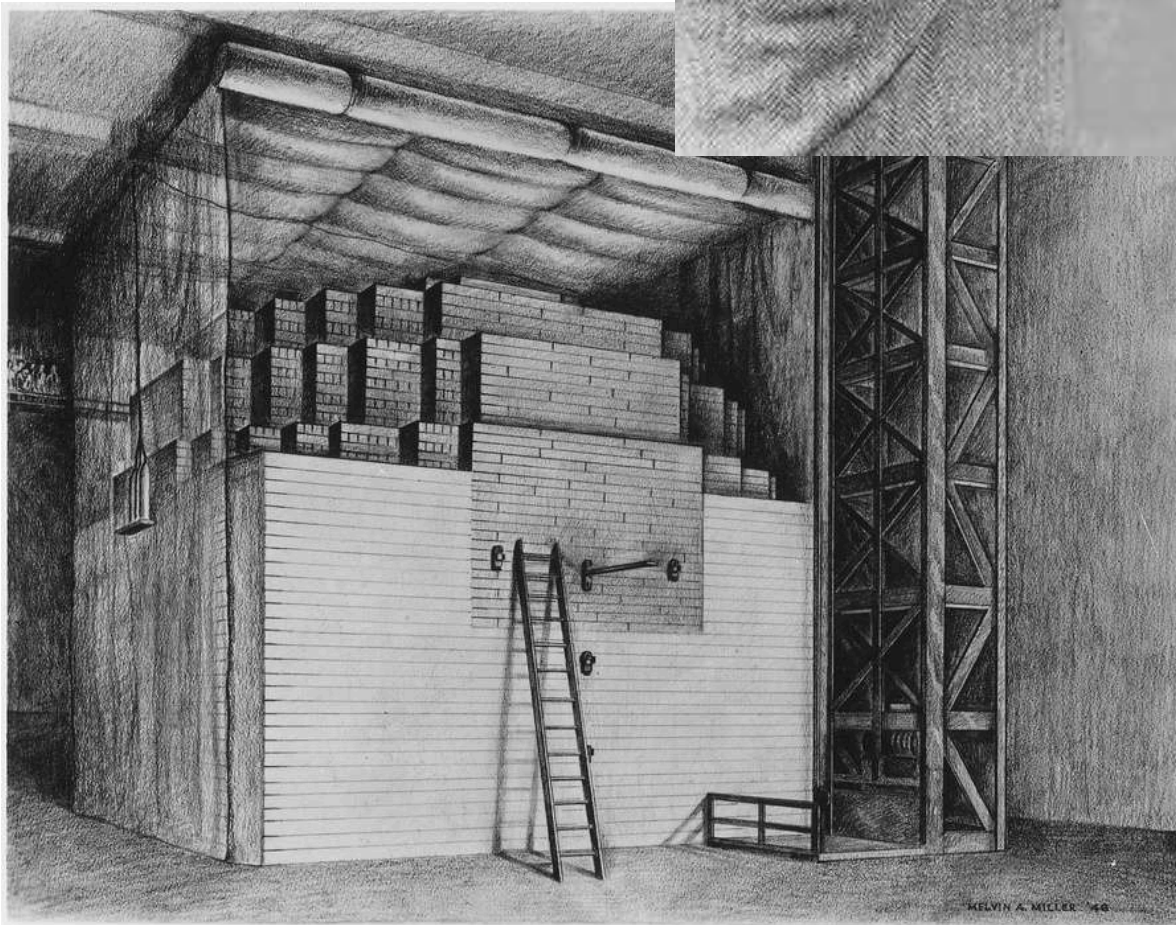
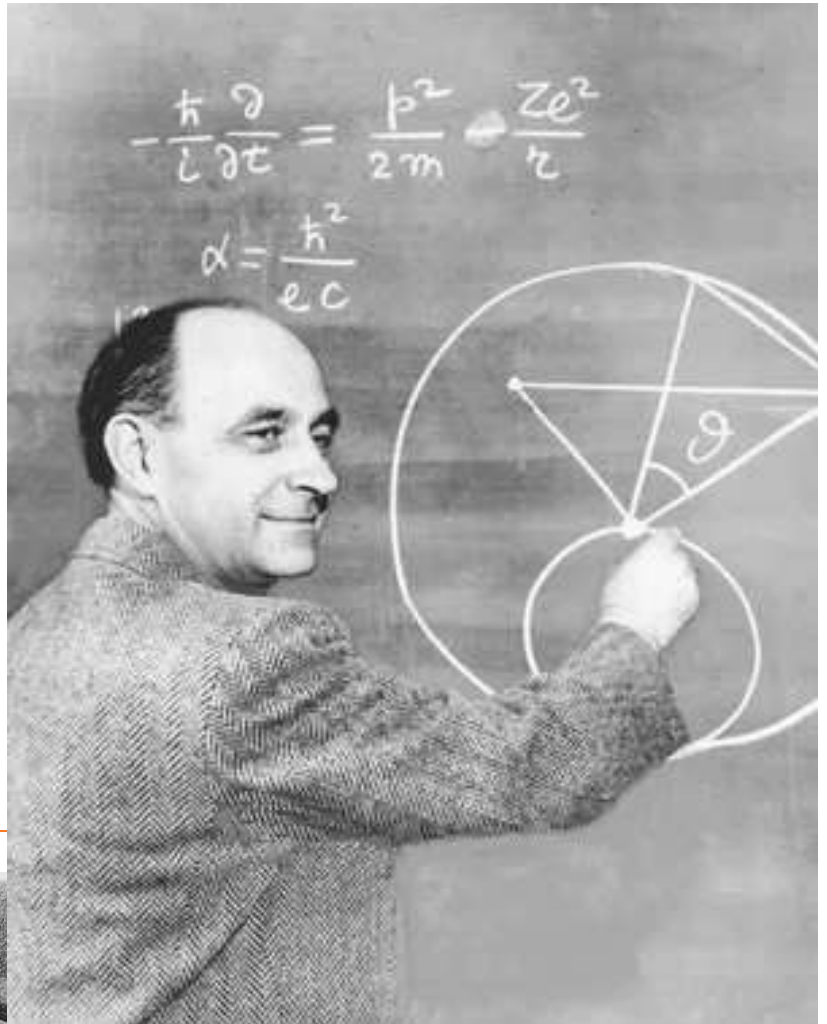
# THE CHICAGO PILE AND ENRICO FERMI



It was very cold on 2 December 1942 in Chicago, in the US, when Enrico Fermi initiated the first human-made self-sustaining nuclear chain reaction. The world's first nuclear reactor started operating at 3-36 pm, in an old squash court at the University of Chicago.

The successful operation of the reactor certainly was a great Christmas present for Fermi. The reactor was the first major technical achievement for the highly secret Manhattan Project, which was the Allied effort to create nuclear weapons during World War II.

Although the project's civilian and military leaders had misgivings about the possibility of a disastrous runaway reaction, they trusted Fermi's safety calculations, and decided they could carry out the experiment in a densely populated area. Fermi described the reactor as "a crude pile of black bricks and wooden timbers".



# FENCING WITH FUSION: THE HOLY GRAIL

DUGGAN FLANAKIN

In a recent article in *The Engineer*, Jim Pickles, Tokamak Energy's chief of Materials Science, predicted that artificial intelligence will soon enable the creation of a new materials database that will save millions of dollars and cut years off the global quest for clean, secure, and affordable fusion energy – the Holy Grail of energy production. That, says Pickles, was the message at the 29th Council of the Parties (COP29) in Azerbaijan. The world, we are told, is so much closer to replicating the energy of the Sun itself – and in the process, meet the rapidly growing demand for affordable green energy.

To many the idea of nuclear fusion still sounds like science fiction. It needs temperatures hotter than the sun's core. It is fast becoming the wave of the future, thanks to worldwide collaboration programs.

The enthusiasm for nuclear fusion fast becoming commercial is shared by Focused Energy CEO Scott Mercer. The San Francisco-based German-American startup, which is planning a \$65 million facility to build lasers, has a goal of powering the entire city of San Francisco with “three soda cans” worth of fusion fuel per day – and, with fusion, there is no radioactive waste.

As Mercer sees it, “If humanity's first foray into energy was the discovery of fire, harnessing fusion will be its culmination. We have the power to harness the universe's own source of energy within the next decade. And we will all be far better for it.”

In Seattle, USA a company Zap Energy is experimenting with its fusion reactor (called FuZE-Q) to try to produce a positive fusion energy output – the fundamental challenge fusion scientists everywhere are trying to achieve.

The company's claim to fame is its new prototype Century device, which relies on a sheared-flow-stabilized Z pinch rather than magnets, cryogenics, or lasers to achieve fusion.

Z-pinch fusion, a phenomenon in which electromagnetic fields are so strong they compress matter together, has been around since the 1950s but had been deemed ineffective because the plasma created fizzled out incredibly quickly. Zap claims that its sheared-flow stabilization extends the lifespan of the plasma produced almost indefinitely, allowing it to generate energy as long as needed.

Matthew Thompson, Zap's vice president of systems engineering, explains that the company's approach is, pulsed, so that it will “run like an internal combustion engine with cylinders firing all day long to produce steady energy output.” This, he added, generates large neutron flux and heat loads in the system – the energy output much desired. The Century device, he says, will test assumptions and define the best path toward commercialization.

In Georgia, USA, Tokamak Energy has revealed the first design details of its high-field spherical tokamak. Tokamak provided an early look at its operation at the annual meeting of the American Physical Society's Division of Plasma Physics in Atlanta in October. The Tokamak pilot plant has a goal of generating 800 MW of fusion power and delivering 85 MW of net (carbon-free) electricity.

Meanwhile, New Zealand-based OpenStar now claims to be pursuing “the only viable path” to producing energy using nuclear fusion. The company is relying on an unusual reactor design it calls Junior, which is based on decades-old experiments.

**CONTINUED ON PG 15**



**CONT.... FROM PG 14**

**M**ost fusion researchers are relying on a donut-shaped (toroidal) tokamak reactor chamber, where plasma is held in place away from its walls, by electromagnets. If they fail to keep the plasma condensed enough to encourage the charged atoms to fuse, or they allow the superheated plasma to touch the tokamak walls where it will instantly cool, there will be no energy produced.

**O**penStar, by contrast, uses one central magnet and an overall spherical shape. The lone magnet must be a superconductor and chilled to near absolute zero, which is minus 273oC. The contained plasma reaches over 100 million oC.

**S**cientists have long predicted that “Fusion is 30 years away from reality.” OpenStar now claims that fusion is just six years away, “and we’re racing against the clock.”

**B**ut Popular Mechanics writer Caroline Delbert is not that confident.

**S**he noted that fusion projects have decades of iteration under their belts, notably the ITER project, Europe’s global-minded and grand-scale tokamak. Delbert says that the “strange dynamic” within fusion research, with its grand predictions, is belied by one simple truth: “After 100 years of thought and 70 years of hands-on design work, how to heat the plasma enough is still a ‘core hurdle’.”

**M**aybe that’s why Zap’s Uri Shumiak says, “We fusion researchers sometimes feel like medieval cathedral builders. You may never see the finished product, but nevertheless, you know you’re doing something great and beautiful [simply by advancing the science].”

**Duggan Flanakin is a senior policy analyst at the Committee For A Constructive Tomorrow (CFACT) based in Washington DC.**

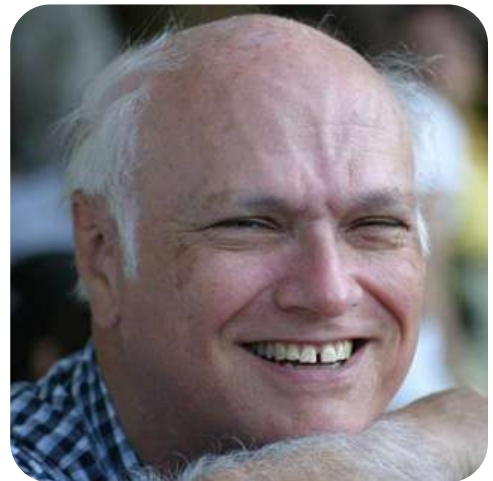
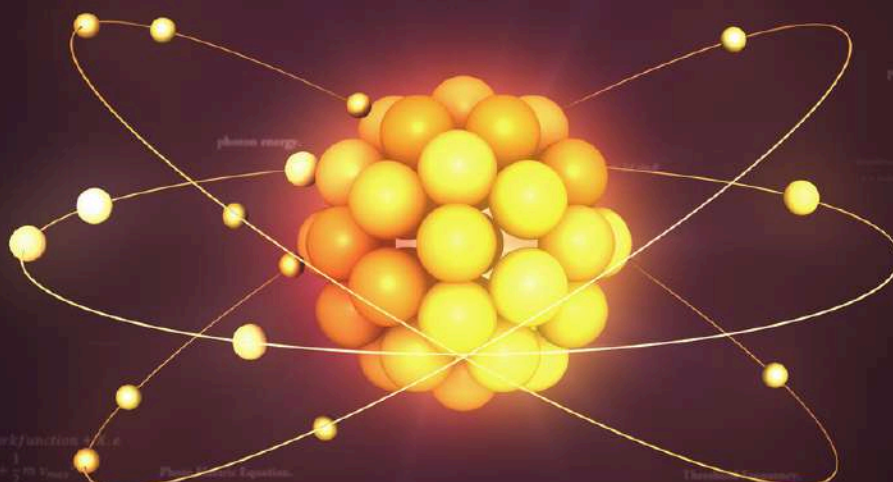


Photo Electric Equation.

Energy levels



**N<sup>2</sup>A**



## ENOUGH SAID!

***“SMRs can be game-changers for sustainable power, meeting needs from district heating to AI data centres, while decarbonizing industries like steel and petrochemicals.”***

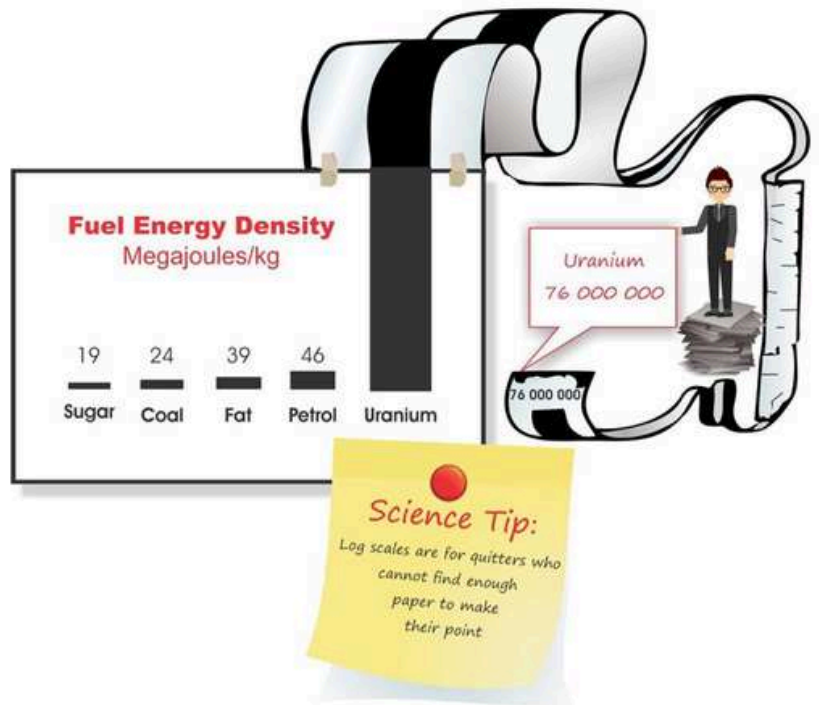
***Rafael Rossi***

***Director General, IAEA.***

***13 November 2024***

Look at the comparison of the Energy Content in a Kilogram of sugar, coal, fat, petrol, and uranium.

This is why you really do get more “Bang” for the Buck.



# NUCLEAR NETWORK AFRICA

## THE WORLD OF NUCLEAR

Any person who has influence and a role to play in representing any Nuclear-Related Developments to advance nuclear power in Africa. or in any international entity, which can contribute to the development of Africa's nuclear energy capability is encouraged to be part of this great journey.

Any company, ranging in capability from a nut and bolt to the most sophisticated piece of equipment, should join the journey now.

### Tailor-made advertising solutions

Maximise your exposure, and build your reputation.

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