



WOMEN!



NONPHYSICS

by @aydinstone

Ursula Franklin

(1921 - 2016)

Physicist and activist

After earning a PhD in experimental physics in Berlin, Ursula moved to Canada to become the first female professor at the University of Toronto's Faculty of Engineering. A tireless pacifist, feminist and human rights advocate, her work on nuclear blast fallout led to the end of atmospheric weapons testing.



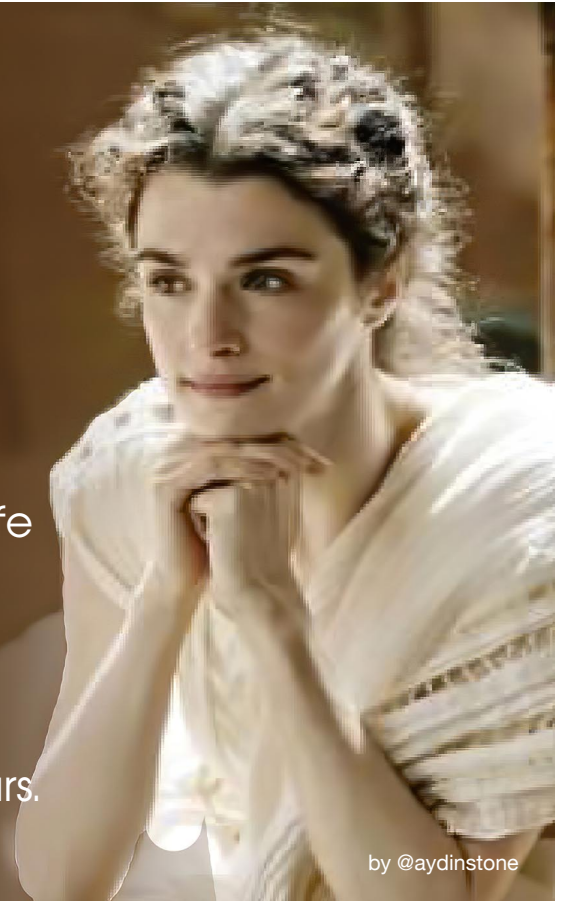
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Hypatia

(c351)

Greek astronomer and mathematician

Hypatia was one of the first women to study mathematics and astronomy. She rose to become the head of the Platonist school in Alexandria, but her pioneering life ended when she was murdered by religious zealots. Some consider her death to mark the end of classical scholarship which set the human race back 1000 years.



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Lene Hau

(1959 -)

Physicist

In 1999, Lene slowed a beam, of light down to the speed of a bicycle. In 2001 the Danish physicist stopped light completely. The now famous work holds important implications for quantum computing and quantum cryptography.

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Cecilia Payne-Gaposchkin

(1900 - 1979)

Astrophysicist

Cecilia studied at Cambridge but was denied a degree because it didn't grant them to women until 1948. She pursued a PhD in the United States and showed in her thesis that the Sun is made of mostly hydrogen and helium. It has been called "the most brilliant PhD thesis ever written in astronomy."

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Vera Rubin

(1928 - 2016)

Astronomer

Vera saw something unusual in galaxies: outer stars orbit just as quickly as those in the centre. She surmised that each galaxy must contain more mass than meets the eye. It was the first observational evidence for dark matter, which today is one of the most studied topics in cosmology.

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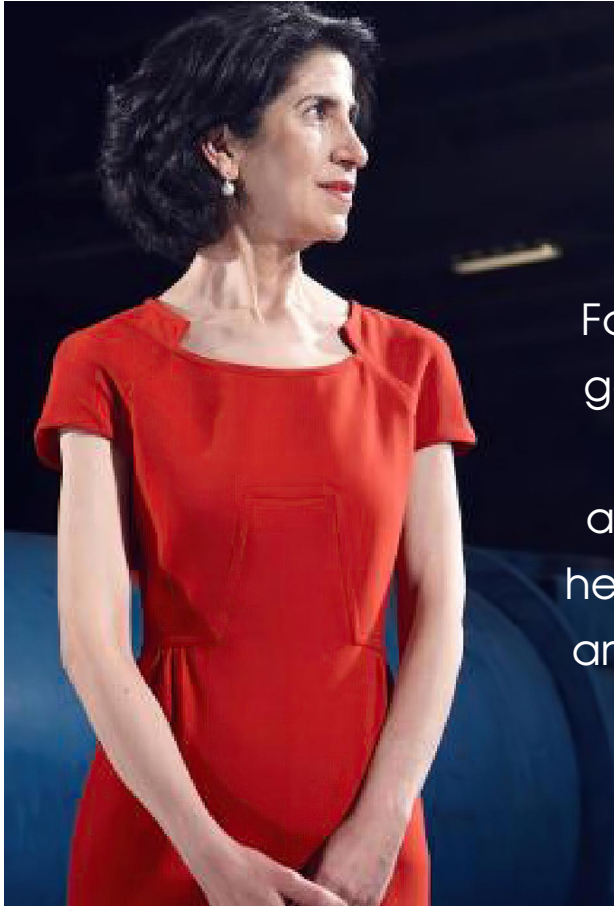
Emmy Noether

(1882 - 1935)

Mathematician

Amalie "Emmy" was a pioneer of abstract algebra. She was also a trailblazer who refused to accept that women should not join the pursuit of knowledge. When Germany's Nazi government hounded her out of academia, she taught in secret. Today, Emmy's theorem's underpin much of modern physics.

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Fabiola Gianotti

(1960 -)

Particle physicist

Fabiola became the first female director general of CERN in 2016. She first studied arts and philosophy because she lived asking the big questions. Physics showed her that she could search for big answers and is now the leading researcher at the largest particle accelerator laboratory on Earth.

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Sophie Germain

(1776 - 1831)

Mathematician

A challenge was issued in Napoleonic France to explain why sand on small glass plates settled into patterns when the glass was vibrated. The only entrant was Sophie. It took her six years but eventually she won with a pioneering paper on elasticity. Despite her work, she was never accepted by the male establishment.

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Jocelyn Bell Burnell

(1943 -)

Astrophysicist

As a PhD student, Jocelyn was analysing radio telescope data when she noticed radio pulses from one point in the sky. She had discovered pulsars: rotating neutron stars that emit beams of radiation, like cosmic lighthouse. Sadly it was her male supervisor who was awarded the Nobel Prize.

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Sandra Faber

(1944 -)

Astronomer

Sandra led the team that diagnosed the first Hubble telescope photos to solve the early problems of the telescope leading it to then capture the most stunning images of space ever seen.

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Marie Skłodowska-Curie

(1867 - 1934)

Physicist and Chemist

Marie conducted the first research on radioactivity, a term she coined. She discovered two elements, invented mobile X-ray machines saving countless lives in the First World War,, described the dangers of radiation, founded two medical research centres. She is the only person to have won two Nobel Prizes



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Rosalind Franklin

(1920 - 1958)

Biophysicist

English chemist and X-ray crystallographer, Rosalind used X-ray diffraction to reveal the inner structures of complex minerals and living tissues. It was her photograph that led directly to the discovery of the double-helix structure of DNA. Sadly she died aged 37 and did not receive a share of the Nobel Prize.



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Hedy Lamarr

(1914 - 2000)

Inventor and actress

To get secret messages past the Nazis, Hedy co-invented a frequency hopping technique that we now call wi-fi. For years this achievement was overshadowed by her career as a Hollywood star (she took part in the first ever semi-nude scene in a movie).

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Marie Goeppert-Mayer

(1906 - 1972)

Physicist

Despite spending most of her career in unpaid positions, Maria made a huge contribution to theoretical physics and chemical physics. She worked out a mathematical model for the structure of nuclear shells, for which she was awarded the Nobel Prize.

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Chien-Shiung Wu

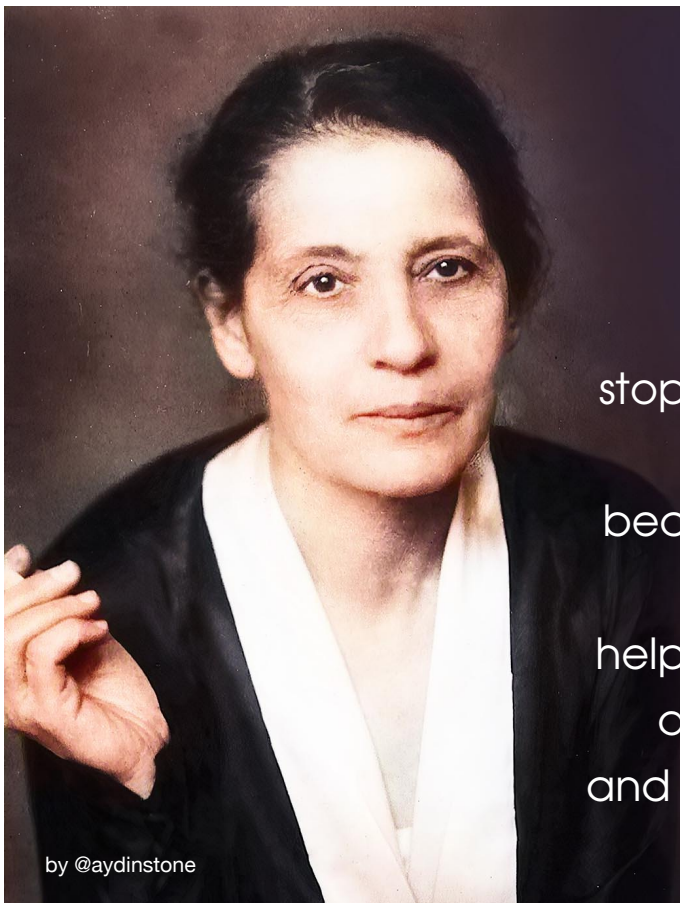
(1912 - 1997)

Physicist

Chien-Shiung disproved the so-called law of the conservation of parity. She worked on the secret wartime race to build an atomic bomb, the Manhattan Project. She became the first female instructor in Princeton's physics department.



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Lise Meitner

(1878 - 1968)

Nuclear physicist

When Lise was a teenager, Austria stopped girls going to higher education. She pursued physics anyway and became the first woman in Germany to hold a professorship in physics. She helped to discover nuclear fission but as a Jew was hounded out of Germany and her male colleague, Otto Hahn was awarded the Nobel Prize in 1944.



Grace Hopper

(1906 - 1992)

Computer Scientist

US navy and rear admiral and computer science pioneer, Grace programmed computers during the end of the Second World War. She coined the term 'debugging' after removing a moth from the circuitry of the Harvard Mark II computer in 1947.

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Melissa Franklin

(1956 -)

Physicist

Melissa is an experimental particle physicist and the Mallinckrodt Professor of Physics, and the former physics department chair, at Harvard University. While working at the Fermi National Accelerator Laboratory in Chicago, her team found some of the first evidences for the existence of the top quark.



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Deborah Berebichez

Physicist

Deborah is a Mexican physicist, data scientist, TV host, educator and entrepreneur who dedicates her career to promoting education in science. She was the first Mexican woman to graduate with a PhD in physics from Stanford University, developing a model for cellular wave transmission.

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Laura Mersini-Houghton

Physicist

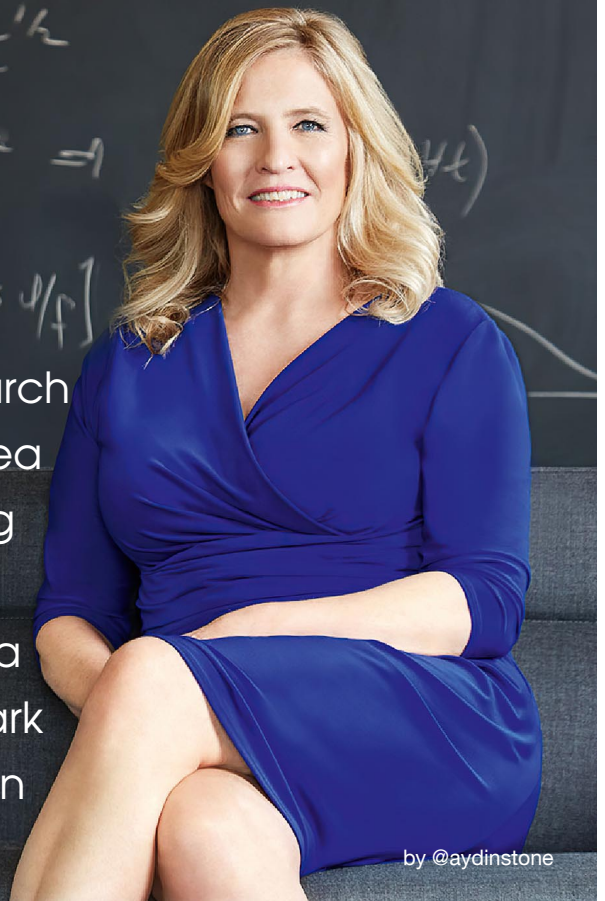
Laura is an Albanian-American cosmologist. She is a proponent of the multiverse hypothesis which holds that our universe is one of many selected by quantum gravitational dynamics of matter and energy. She argues that anomalies in the current structure of the universe are best explained as the gravitational tug exerted by other universes.

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Katherine Freese

Physicist

Katherine is the Director of the Nordic Institute for Theoretical Physics, in Stockholm. She has contributed to research on dark matter and dark energy. Her idea of indirect detection in the Earth is being pursued by the IceCube Neutrino Observatory experiment. She proposed a new theoretical type of star, called a dark star, powered by dark matter annihilation rather than fusion.



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Janet Conrad

(1963 -)

Physicist

Janet is an American experimental physicist, researcher, and professor at MIT studying elementary particle physics. Her work focuses on neutrino properties and the techniques for studying them.



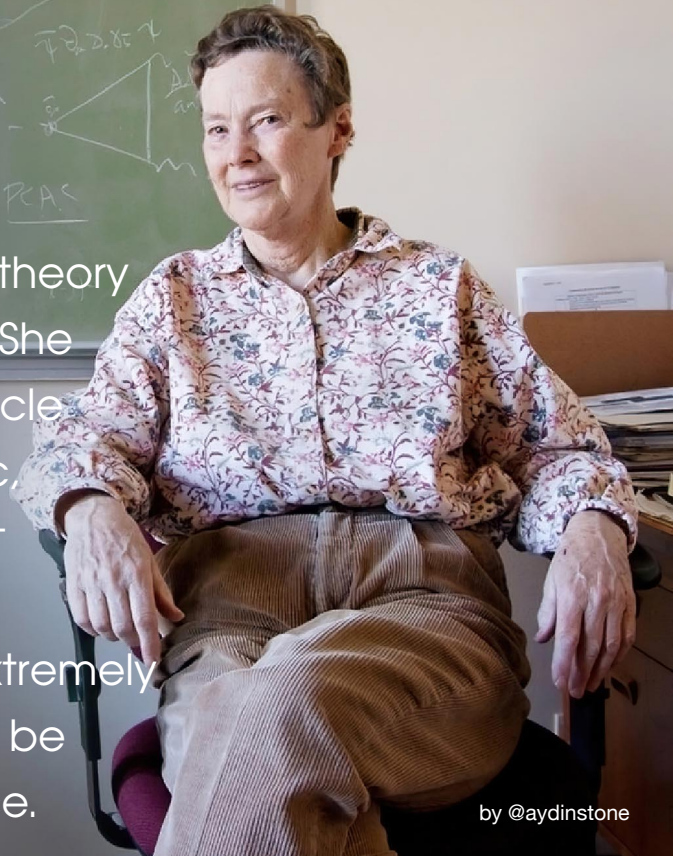
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Helen Quinn

(1943 -)

Particle physicist

Helen discovered the Peccei-Quinn theory which implies a symmetry of nature. She showed how the three types of particle interactions (strong, electromagnetic, and weak), which look very different as we see their impact in the world around us, become very similar in extremely high-energy processes and so might be three aspects of a single unified force.



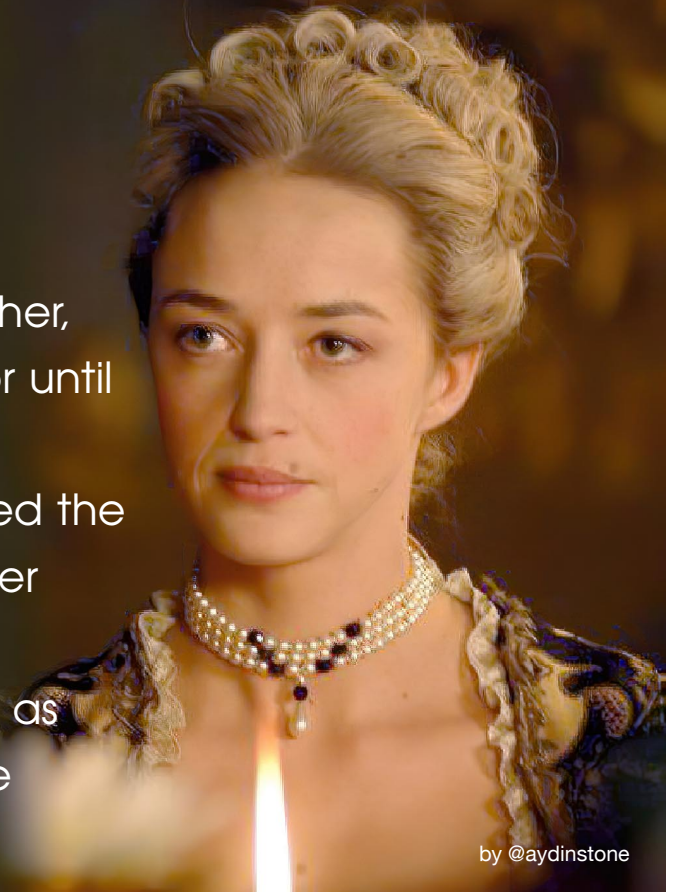
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Émilie du Châtelet

(1706 - 1749)

Mathematician and physicist

Émilie was a French natural philosopher, mathematician, physicist, and author until her untimely death giving birth. Her translation of Newton is still considered the standard French translation today. Her profound contribution to Newtonian mechanics explained kinetic energy as the half of the mass times the square of the velocity of a moving object.



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Lisa Randall

(1962 -)
Physicist

Lisa's research includes elementary particles, fundamental forces and extra dimensions of space. She studies the Standard Model, supersymmetry, possible solutions to the hierarchy problem concerning the relative weakness of gravity, cosmology of extra dimensions, baryogenesis, cosmological inflation and dark matter.

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Ibtesam Badhrees

Physicist

Ibtesam was the first Saudi woman member of CERN. She is also the first Saudi female PhD holder to work in the National Center for Mathematics and Physics in King Abdulaziz City for Science and Technology.

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Jill Tarter

(1944 -)

Astronomer

Jill is an American astronomer best known for her work on the search for extraterrestrial intelligence (SETI). In her PhD thesis she coined the term "brown dwarf" while researching small-mass objects that fail to stably fuse hydrogen.



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Margherita Hack

(1922 - 2013)

Astrophysicist

Margherita was an astronomer, humanitarian and vegetarian. She has been the first Italian woman to administrate the Trieste Astronomical Observatory from 1964 to 1987, bringing it to international fame.



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Ada Lovelace

(1815 - 1852)

Mathematician

Ada was an English mathematician and writer, daughter of the poet Lord Byron. She worked on Charles Babbage's proposed mechanical general-purpose computer, the Analytical Engine. She published the first algorithm intended to be carried out by such a machine and is regarded as the first computer programmer.



Margaret Hamilton

(1936 -)

Computer scientist

Margaret was Director of the Software Engineering Division of the MIT Instrumentation Laboratory, which developed on-board flight software for the Apollo space programme and the Moon missions.

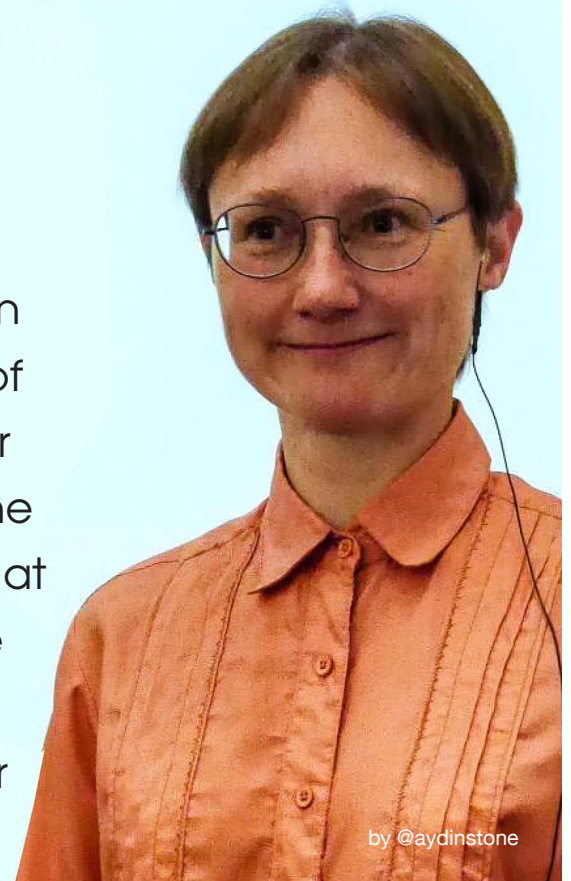


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Veronika Hubeny

Physicist

Veronika specialises in string theory and quantum gravity. Since 2015, she has been a professor in the Department of Physics of University of California, previously Professor of Physics at Durham University. In 2017, she was the only woman member of a panel at the World Science Festival when the male moderator repeatedly spoke over her, even when she was attempting to answer his questions.



Lisa Kaltenegger

(1977 -)

Physicist

Lisa is an Austrian astronomer with expertise in the modelling and characterization of exoplanets and the search for life. In 2009, she discussed how one can determine habitability for moons around giant planets coinciding with the suggestion of such a moon in the 2009 movie *Avatar*.



Maggie Aderin-Pocock

(1968 -)

Astrophysicist

Maggie, who has dyslexia, completed a PhD in mechanical engineering and is now working observation instruments for the Aeolus satellite, which will measure wind speeds to help the investigation of climate change. She is also a presenter of BBC TV's *The Sky At Night*.

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Donna Strickland

(1959 -)

Physicist

In 2018, Donna became the 3rd woman in history to be awarded the Nobel Prize for Physics, 50 years after the last one. Her work involves using lasers to produce ultrashort pulses of very high intensity, useful in laser micromachining, surgery, medicine, and in fundamental science studies.

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Katherine Johnson

(1918 - 2020)

Mathematician

Katherine worked as a human computer analyzing topics such as gust alleviation for spacecraft. Due to federal workplace segregation she and the other African-American women in the computing pool were required to work in rooms that were separate from those of their white peers. Their office was labeled as "*Colored Computers*".

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Gladys Mae West

(1930 -)

Mathematician

Gladys is known for her contributions to the mathematical modelling of the shape of the Earth, and her work on the development of the satellite geodesy models that were eventually incorporated into the Global Positioning System (GPS).

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Andrea Ghez

(1965 -)

Astrophysicist

Andrea is a professor in the Department of Physics and Astronomy at the University of California. Along with Reinhard Genzel she studied the movement of stars around Sagittarius A* in the middle of our galaxy, the Milky Way, revealing there to be a super massive black hole at the centre. This earned her a share in the 2020 Nobel Prize for Physics (the 4th woman to win the prize).

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Suchitra Sebastian

Physicist

Suchitra is a condensed matter physicist at Cavendish Laboratory, University of Cambridge. She is known for her work in quantum materials, and discovered unconventional insulating materials which display simultaneous conduction-like behaviour. She was named as one of thirty Exceptional Young Scientists in 2013 and spoke at the World Economic Forum at Davos in 2016.

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