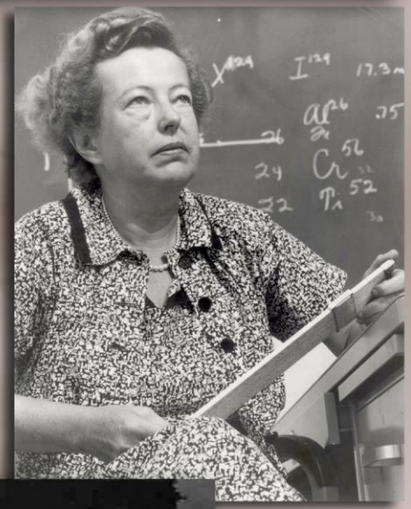
2022 Calendar



presented by **COST Action ChETEC**

Women Scientists Who Made Nuclear Astrophysics

Our purpose is to honor, to encourage, and to educate

To honor the women who have influenced the development of Nuclear Astrophysics;

To encourage young scholars to choose Nuclear Astrophysics as their career path and to present to them good role models for the process;

To educate the scientific community and the general public about the significant role women have played and continue to play in the development of Nuclear Astrophysics.

Nuclear astrophysics is a melding of theoretical and experimental nuclear physics, observational astronomy, astrophysical modeling, and cosmological theory. Women scientists have been an essential part of the development of these fields, having made tremendous contributions in the form of astronomical observations, visual and spectroscopic identifications, star classifications and catalogues, prediction and discovery of stellar objects, design and construction of instrumentation, theoretical and experimental discoveries of nuclear materials, physics explanations, mathematical derivations and chemical interpretations of all things -- galactic and beyond.

Everyone benefits from role models. Female role models reduce the impact on women of stereotype threat, i.e., of being at risk of conforming to a negative stereotype about one's social, gender, or racial group [1,2]. This can lead women scientists to underperform or to leave their scientific career because of negative stereotypes such as, not being as talented or as interested in science as men. Sadly, history rarely provides role models for women scientists; instead, it often renders these women invisible [3]. In response to this situation, we present a selection of twelve outstanding women who helped to develop nuclear astrophysics.

Three categories of photographs have been identified as being important for this project: early career, mid-career, and action photos. We have directed our efforts to appeal to young scholars, making early career photos especially appropriate. To see what a Nobel Laureate, for example, looked like in her twenties is important when trying to attract young scholars in their twenties. This will provide visual role models in order to answer the larger question: What does a scientist look like? The hoped for answer to be generated in the minds of today's young scholars will be: A scientist looks just like me! The mid-career photos are those representations that may have been displayed at the height of the scientist's career. They show a more mature woman who may be recognizable to various groups in the sciences. Action photos are also important because they place the scientist within the context of their work in the laboratory or observatory.

We have presented this information in poster format [4], a copy of which can be freely downloaded at [www.chetec.eu]. The resulting paper has been published in the Springer Proceedings in Physics book series [5]. This calendar, which will be translated into over thirty languages, is the completion of the final goal of our project.

[1] See, e.g,``Delusion of gender'' Cordelia Fine, 2010, W.W. Norton and Co. ISBN 0-393-06838-2, page 36 and references therein.

[2] Steele & Aronson, 1995, "Stereotype threat and the intellectual test performance of African-Americans" *Journal of Personality and Social Psychology, 69,* 797-811.

[3] ``...by moving a woman to the background, by making her disappear completely from the narrative, by minimising her involvement, by fiddling with the story [...], by diminishing or stealing her work, by confining her to the role of 'wife of' or 'sister of' [or 'assistant of'], auto-erasure…" http://www.cafebabel.co.uk/society/article/georgette-sand-when-history-makes-women-invisible.html

[4] M. Lugaro, et al., "Women Scientists Who Made Nuclear Astrophysics", Poster presented at the 15th International Symposium on Nuclei in the Cosmos, Assergi, L'Aquila, Italy, June 24-29, 2018.

[5] Hampton C.V. et al. (2019) Women Scientists Who Made Nuclear Astrophysics. In: Formicola A., Junker M.,Gialanella L., Imbriani G. (eds) Nuclei in the Cosmos XV. Springer Proceedings in Physics, vol 219. Springer, Cham. Preprint available at: http://arXiv:org/abs/1809.01045

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W., The early evolution of the Sun, (1963) Icarus, 1, 422 **Tinsley 1)** An Accelerating Universe, 1975, Nature 257, 454 – 457 (9 Oct.1975); doi:10.1038/257454a0 **2)** Beatrice Tinsley https://physicstoday.scitation.org/do/10.1063/PT.5.031405/full/ **3)** University of Canterbury, http://www.canterbury.ac.nz/about/capitalworks/projects/rrsic/rrsic-stage-2/ Building named to honor Beatrice Tinsley will be completed in 2019 **4)** Poem: https://www.nytimes.com/2018/07/18/obituaries/overlooked-beatrice-tinsley-astronomer.html **; International Day Observances:** https://www.un.org/en/sections/observances/international-days

Marie Salomea Skłodowska Curie

1867-1934

"It is my earnest desire that some of you should carry on this scientific work and keep for your ambition the determination to make a permanent contribution to science." - Marie Curie

Mention nuclear physics and the first name that comes to mind is that of Polish-born, Marie Skłodowska Curie. With her husband Pierre, Marie investigated radiation phenomena. She is credited with the development of the theory of radioactivity; the techniques for isolating radioactive isotopes; and the discovery of two chemical elements, polonium and radium. The Curies were awarded the Nobel Prize in Physics in 1903 and Marie won another, in Chemistry in 1911, becoming the first person to claim Nobel honors twice. After Pierre's tragic death in 1906, she accepted his faculty position at the Sorbonne. Marie Curie was a humanitarian who worked to save soldiers' lives during WWI. She developed a mobile x-ray unit powered by a dynamo; created a fleet of vehicles for the battlefield; taught a radiology course for doctors and nurses; and then, operated one of the x-ray vehicles on the battlefield. She is the founder of the Radium Institute in Warsaw. The Curie Institute in Paris, a major centre for medical research today was named for her. Professor Curie's outstanding achievements and response to challenges have inspired and will continue to inspire scientists for generations to come.

FUN FACTS

- Curium, Cm (element 96) was named to honor Marie Curie and her husband, Pierre.
- Asteroid 7000 Curie was named for Marie and Pierre Curie. It was discovered in 1939 by Fernand Rigaux at Uccle, Belgium.

Art: The Fabric of Space-Time - The Merger

January 2022

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
27	28	29	30	31	1 New Year's Day	2
3 New Year's Day (Observed) 1994 - Anniversary of the death of Georgeanne R. Caughlan	4 2nd January (substitute day) (Scotland)	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21 2017 - Anniversary of the death of Erika Helga Ruth Bohm-Vitense	22	23
24 International Day of Education (A/RES/73/25)	25	26	27 1941 - Anniversary of the birth of Beatrice Muriel Tinsley	28	29	30
31						

December '21

M	T	W	T	F	S	S
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February '22

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28						

Notes

Lise Meitner

1878-1968

"You must not blame us scientists for the use which war technicians have put our discoveries."
-Lise Meitner

Lise Meitner was born in Vienna and studied Physics, Mathematics and Philosophy at the University of Vienna. In 1906, she was the second woman there to receive a doctorate in Physics. She moved to Berlin in 1907 where she met Otto Hahn, with whom she collaborated for the following 30 years. She was the first woman to become a full professor in Germany. Lise was Jewish; her life in Nazi Germany became increasingly at risk. In 1938 she fled to Sweden where she continued her research. One of her most significant scientific achievements is the theoretical explanation of nuclear fission, a work that she published with her nephew Otto Frisch in 1939. Otto Hahn was awarded the Nobel Prize in Chemistry in 1944 for the experimental component of this work. She also studied radioactivity and together with Otto Hahn discovered a number of radioactive isotopes, such as Protactinium 231. Lise Meitner was nominated for the Nobel Prize 48 times (29 in Physics and 19 in Chemistry), but none was ever awarded to her.

FUN FACTS

- Lise Meitner was listed as inventor on a US patent for the preparation of radiothorium. The patent was filed (and owned) by a German company, Dr. Knöfler & Co. It was a valid patent until 1933 (expiring because it reached its maximum legal lifetime of 20 years). [Radiothorium is now known as Thorium-228 and the Mesothorium also mentioned in the patent is Radium-228.]
- Meitnerium, Mt (element 109) was named to honor Lise Meitner.

Art: The Fabric of Space-Time - Reflection Nebula

February 2022

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
31	1 1980 - Anniversary of the death of Toshiko Yuasa	2	3	4	5 1918 - Anniversary of the birth of Edith Alice Muller	6
7	8	9	10	11 International Day of Women and Girls in Science (A/RES/70/212)	12	13
14	15	16	17	18	19	20 1972 - Anniversary of the death of Maria Goeppert Mayer
21	22	23	24	25	26	27
28	1	2	3	4	5	6

January '22

M	T	W	T	F	S	S
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31						

March '22

M	T	W	T	F	S	S
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14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

Notes

Ştefania Mărăcineanu

1882-1944

" I have great esteem for the work that [Ştefania Mărăcineanu] has accomplished. In particular, she has acquired a perfect knowledge of precise electrometric measurements." – Marie Curie

Ştefania Mărăcineanu was born in Bucharest, Romania and graduated from the Faculty of Science of the University of Bucharest in 1910. After a teaching career in secondary schools, at the age of 40, she obtained a fellowship at the Radium Institute in Paris working with Marie Skłodowska Curie on radioactivity. In 1924, she defended her PhD at the Sorbonne in Paris on the subject of "Research on the [decay] constant of polonium and the penetration of radioactive substances in metals". Although Ştefania did not explain the phenomenon theoretically nor prove it experimentally, she may have introduced the philosophical concept of "artificial radioactivity", i.e., the potential of a radioactive element to induce radioactivity in a stable element. After her PhD, Dr. Mărăcineanu worked on developing techniques for atmospheric nucleation reactions in rain clouds, then returned to Romania in 1930 to install their first Radiation Laboratory where she continued her research. Since 1937, she was a Correspondent Member of the Romanian Academy of Science, until she died of cancer due to radioactive irradiation.

FUN FACT

In 2003, Romfilatelia, Romania's stamp issuing authority released a set of three stamps called 'Women and Inventics'. The 1LEI stamp features a photo of Marie Curie containing Stefania Mărăcineanu's name on it.

Art: The Fabric of Space-Time - Supernova I

March 2022

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
28	1	2	3	4	5	6
7	8 International Women's Day	9	10	11	12	13
14	15	16	17 St Patrick's Day (Northern Ireland)	18	19	20 Vernal Equinox 1533 UTC
21	22	23 1981 - Anniversary of the death of Beatrice Muriel Tinsley	24	25	26	27 Daylight Savings Time Starts
28	29	30	31	1	2	3

February '22

M	T	W	T	F	S	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28						

April '22

M	T	W	T	F	S	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

Notes

Cecilia Helena Payne Gaposchkin

1900-1979

" Young people, especially young women often ask me for advice. Here it is valeat quantum [valere potest]. Your reward will be the widening of the horizon as you climb. And if you achieve that reward you will ask no other."

- Cecilia Payne-Gaposchkin

Cecilia Payne-Gaposchkin was a British-American astronomer. In 1919, she enrolled at Cambridge University and became fascinated with astronomy after attending a lecture by Arthur Eddington on how solar eclipses can be used to test general relativity. She later moved to America, where she received a PhD from Radcliffe College at Harvard. During her PhD, she made the breakthrough discovery that the strength of stellar spectral lines depend not only on the stellar surface composition, but also on the degree of ionisation at a given temperature. She concluded that hydrogen and helium are much more abundant in stars than all other chemical elements - an idea so revolutionary at the time that she was initially discouraged from publishing her results. In 1956, she became the first woman full-professor at Harvard's Faculty of Arts and Sciences. Later she became the Chair of the Department of Astronomy, being the first woman to ever chair a department at Harvard.

FUN FACT

Cecilia Payne-Gasposchkin worked as a " Human Computer" for the Harvard College Observatory, reading spectroscopic lines on glass plates in order to interpret star composition and temperature.

Art: The Fabric of Space-Time - Stellar Wind

April 2022

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
28	29	30	31	1	2	3
4	5 2020 - Anniversary of the death of E. Margaret Burbidge	6	7 World Health Day [WHO] (WHA/A.2/Res.35)	8	9	10
11	12 International Day of Human Space Flight (A/RES/65/271)	13	14	15 Good Friday	16	17
18 Easter Monday	19	20	21 World Creativity and Innovation Day (A/RES/71/284)	22 International Mother Earth Day (A/RES/63/278)	23	24
25	26 World Intellectual Property Day [WIPO]	27	28 World Day for Safety and Health at Work	29	30	1

March '22

M	T	W	T	F	S	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

May '22

M	T	W	T	F	S	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

Notes

Maria Goeppert Mayer

1906-1972

" Maria Mayer played a big role in figuring out the stability of the elements." –M. Thiemans, UC San Diego

Magic nucleon numbers, reflected in nuclear properties and in the observed solar abundances, had puzzled physicists for a long time. In 1949, Maria Goeppert Mayer came up with a brilliant solution: couple the nucleon spin with the orbital parameter. She began her studies in Mathematics before pursuing a PhD in Physics, which she obtained in 1930 at the University of Göttingen. After marrying, she moved to the United States where her husband had accepted a position at Johns Hopkins University. Strict rules against nepotism prevented the university from also hiring her as a faculty member and she was given a job as an assistant. When the couple moved to Columbia University, Maria was allowed to have an office, but received no salary. Later, she was paid to work for the Manhattan project, holding positions also at the University of Chicago and Argonne National Laboratory. In 1960 she was appointed Professor of Physics at UC San Diego. For her discoveries concerning nuclear shell structure, Professor Mayer won the Nobel Prize in 1963 with Hans Jensen and Eugene Wigner.

FUN FACTS

- When Maria Mayer won the Nobel Prize, a local news headline reported: "San Diego Housewife Wins Nobel Prize".
- The unit for the two-photon absorption cross-section is named the Goeppert-Mayer (GM) unit in recognition of the work Maria did for her Ph.D. thesis.

"My father said: Don't grow up to be a woman, and what he meant by that was, a housewife ... without any interests." –Maria Goeppert Mayer

Art: The Fabric of Space-Time - Cosmic Microwave Background

May 2022

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
25	26	27	28	29	30	1
2 Early May Bank Holiday	3	4	5	6	7	8
9	10 1900 - Anniversary of the birth of Cecilia Payne Gaposchkin	11	12	13	14	15 International Day of Families (A/RES/47/237)
16 International Day of Living Together in Peace (A/RES/72/130) International Day of Light (UNESCO 39 C/Resolution 16)	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

April '22

M	T	W	T	F	S	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

June '22

M	T	W	T	F	S	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

Notes

Toshiko Yuasa

1909-1980

"The roots of the sciences come from the broad, abundant feeling of love." – Toshiko Yuasa

Toshiko Yuasa was the first woman nuclear physicist in Japan. She graduated in 1934 from Tokyo Bunrika University where she specialised in spectroscopy and in 1939; she won a prestigious French scholarship. After a month of sailing, she arrived in Paris to start working with Frédéric Joliot-Curie on artificial radioactivity. In 1943, Toshiko was awarded a PhD from the Collège de France on the continuous beta-ray spectrum in artificial radioactive material. As a Japanese national she was forced to evacuate to Berlin in 1944, where she worked only for a few months building a double spectrometer before returning to Japan. Because nuclear research was banned in Japan after the war, she could not continue her academic career there and in 1949, she came back to France to continue her research at CNRS. In 1956, Toshiko published an article warning about the dangers of hydrogen bomb testing at Bikini Atoll. In 2012, Ochanomizu University established a scholarship in her name, supporting Japanese women to study abroad.

FUN FACTS

- Toshiko Yuasa moved to France after WW II and worked at the CNRS. During the time there, she filed two patent applications, one for a "Calculation rule in particular for radioactivity measurements" and one for a "stereo-camera."
- Nineteen years after receiving a PhD in France, Toshiko Yuasa earned a second doctorate in Japan from Kyoto University.

Art: The Fabric of Space-Time – Supernova II

June 2022

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
30	31	1	2 Spring Bank Holiday	3 Queen's Platinum Jubilee 1923 - Anniversary of the birth of Erika Helga Ruth Bohm-Vitense	4	5
6	7	8	9	10	11 Queen's Birthday	12
13	14	15	16	17	18 1882 - Anniversary of the birth of Stefania Maracineanu	19
20	21 International Day of the Celebration of the Solstice (A/RES/73/300) Summer Solstice 0914 UTC	22	23	24	25	26
27	28 1906 - Anniversary of the birth of Maria Goeppert Mayer	29	30 International Asteroid Day (A/RES/71/90)		2	3

May '22

M	T	W	T	F	S	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

July '22

M	T	W	T	F	S	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Notes

Georgeanne Robertson Caughlan

1916-1994

Professor Caughlan was referred to as "Jan" by her friends and colleagues.

At the core of nuclear astrophysics are the rates at which nuclei inside stars combine to produce new nuclei. Not surprisingly, such information is one of the most sought after in the community. Jan's very first efforts to provide extensive compilations of nuclear reaction rates based on current experimental information resulted in some of the most famous papers in the field. As a Research Fellow, she worked with Wm. A. Fowler on the problem of energy generation in stars. Jan's job was to study the experimental data for the reactions important for stars in order to derive their rates. Interestingly, Jan's career followed a very nontraditional path. After receiving her baccalaureate degree in Physics she decided to dedicate herself to raising her five children. Later on, she went back to Physics, obtained her PhD at the age of forty eight, and became Professor at the age of fifty eight. At Montana State University, Professor Caughlan served as Acting Dean of the Graduate College and Interim Acting Vice-President for Academic Affairs.

FUN FACT

" William A. Fowler expressed his indebtedness to Jan for her role in the theoretical part of studies of the reactions important to nucleosynthesis for which he received his Nobel Prize in Physics." – Barbara Zimmerman

Art: The Fabric of Space-Time – Reflection Nebula with Dust Lanes

July 2022

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
27	28	29	30	1	2	3
4 1934 - Anniversary of the death of Maria Salomea Sklodowska Curie	5	6	7	8	9	10
11	12 Battle of the Boyne Orangemen's Day(Northern Ireland)	13	14	15	16	17
18	19	20	21	22	23	24 1995 - Anniversary of the death of Edith Alice Muller
25	26	27	28	29	30	31

June '22

M	T	W	T	F	S	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

August '22

M	T	W	T	F	S	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
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22	23	24	25	26	27	28
29	30	31				

Notes

Edith Alice Müller

1918-1995

``The Scientific community ... recognized Edith as a great professor, astronomer, and organizer. Her human qualities, kindness, and availability for her students and colleagues, her pioneering work as a woman in the field of astronomy, her open mind and courage were unanimously appreciated ... ‘’ – André Maeder

Edith Alice Müller was born in Madrid of Swiss parents. She finished her studies at ETH Zurich and obtained her PhD in mathematics in 1943. She worked in Zurich, Cambridge (UK), Ann Arbor (USA), Neuchatel and Geneva, becoming full professor in 1972. Edith worked both on the observation and theory of the solar atmosphere. In 1960, while at Ann Arbor, with her collaborators L. Goldberg and L. H. Aller she published an extremely influential paper on “The Abundances of the Elements in the Solar Atmosphere”. With more than 430 citations, the paper remained the standard for the following 20 years. Edith was fluent in English, French, German, and Spanish and the first woman to be appointed General Secretary of the International Astronomical Union (IAU). She played an important role in promoting Astrophysics and international scientific cooperation. The “Edith Alice Müller Award” had been granted to an outstanding PhD thesis in Switzerland for the first time in 2018 in recognition of Professor Müller’s scientific research on the composition of the Sun and for her involvement in promoting Astrophysics internationally.

FUN FACT

Prof. Edith Müller was a Swiss Mathematician and Astronomer who studied the math in Islamic design. Her Ph.D. dissertation titled "Application of Group Theory and Structural Analysis to the Moorish Adornments of the Alhambra in Granada" became a key piece of art literature in the study of Islamic design.

Art: The Fabric of Space-Time – Planetary Nebula

August 2022

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1 Summer Bank Holiday (Scotland)	2	3	4	5	6	7
8	9	10	11	12 1919 - Anniversary of the birth of E. Margaret Peachey Burbidge	13	14
15 1944 - Anniversary of the death of Stefania Maracineanu	16	17	18	19	20	21
22	23	24	25	26	27	28
29 Summer Bank Holiday (ENG, NIR, WAL) International Day against Nuclear Tests (A/RES/64/35)	30	31	1	2	3	4

July '22

M	T	W	T	F	S	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

September '22

M	T	W	T	F	S	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

Notes

E. Margaret Peachey Burbidge

1919-2020

``[Margaret] is one of the Giants of the transformation of astronomy in the 20th century into a major branch of physics''. – G. Fuller, UC San Diego

Margaret Burbidge had played a central role in shaping the field of nuclear astrophysics. She had been a pioneer all her life, as a scientist and as a woman scientist. Since childhood, she was fascinated by stars and excessively large numbers. Her interests merged upon reading Sir James Jeans' books on astronomy. She received her PhD from the University of London Observatory in 1943. Her early research focused on chemical abundances in stars. Margaret entered the field of astronomy in the 1940s when it had virtually no women, and in 1945 she was turned down for a Carnegie Fellowship due to her gender. Thanks to her influence, women can observe at any American observatory today. The landmark 1957 paper by M. Burbidge, Burbidge, Fowler, and Hoyle: "Synthesis of the Elements in Stars" thrust the theory of stellar nucleosynthesis into the scientific spotlight. For her pioneering research, Margaret has received 12 honorary degrees and numerous honors, including being a Fellow of the Royal Society of London. Prof. Burbidge has also held many leadership positions, including being the first woman president of the American Astronomical Society and the first director of the Center for Astrophysics and Space Sciences (CASS) at the University of California San Diego.

"If frustrated in one's endeavor by a stone wall or any kind of blockage, one must find a way around - another route towards one's goal." – a guiding principle formulated by Margaret Peachey Burbidge, 1945.

FUN FACTS

- Margaret helped develop some of Hubble Space Telescope's original instruments.
- In 1960, Asteroid 5490 Burbidge was named to honor Margaret Burbidge.

Art: The Fabric of Space-Time – He Flash on a Companion Star

September 2022

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
29	30	31	1	2	3	4
5	6	7 International Day of Clean Air for Blue Skies (A/RES/74/212)	8	9	10	11
12	13 2012 - Anniversary of the death of Dilhan Ezer Eryurt	14	15	16 International Day for Preservation of the Ozone Layer (A/RES/49/114)	17	18
19	20	21	22	23 Autumnal Equinox 0104 UTC	24	25
26	27	28	29	30	1	2

August '22

M	T	W	T	F	S	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
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22	23	24	25	26	27	28
29	30	31				

October '22

M	T	W	T	F	S	S
					1	2
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10	11	12	13	14	15	16
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24	25	26	27	28	29	30
31						

Notes

Erika Helga Ruth Böhm-Vitense

1923-2017

Erika Böhm-Vitense was the first scientist to accurately describe convective mixing in stellar interiors using a prescription that has been widely adopted for half a century now in all stellar evolutionary codes. Her 1958 paper, written in German, is a crucial contribution to the "mixing-length" theory of stellar convection. The paper has been cited more than 1200 times; seventy, of which occurred in 2017. Erika was born in Kurau, Germany, and she obtained her doctoral degree in 1951 in Kiel. In the 1960s and 1970s she combined theory and observations in optical studies of a large variety of objects: from helium stars, to supergiants and open clusters, to name a few. In 1968 she moved to the USA with her husband where she obtained a senior research associate position at the University of Washington and she became a Professor in 1971. Prof. Böhm-Vitense received many awards for her scientific works, including the Annie Jump Cannon Prize from the American Astronomical Society in 1965 and the Karl Schwarzschild Medal from the Astronomische Gesellschaft in 2003.

FUN FACT
Erika produced a three-volume set of textbooks entitled: Introduction to Stellar Astrophysics.
Volume 1) basic stellar parameters, Volume 2) stellar atmospheres, and Volume 3) stellar interiors.

Art: The Fabric of Space-Time – Disk of Dust and Gas

October 2022

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
26	27	28	29	30	1	2
3	4	5 World Teachers' Day [UNESCO] (27 C/INF.7)	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25 1916 - Anniversary of the birth of Georgeanne R. Caughlan	26	27 1968 - Anniversary of the death of Lise Meitner	28	29	30 Daylight Savings Time Ends
31						

September '22

M	T	W	T	F	S	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

November '22

M	T	W	T	F	S	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

Notes

Dilhan Ezer Eryurt

1926-2012

Dilhan Eryurt was born in Izmir. After graduating from the Department of Mathematics and Astronomy of Istanbul University, Dilhan completed her doctorate in Astronomy at Ankara University in 1953. She moved to Canada and collaborated with A. G. W. Cameron, modelling protostellar evolution of gas/dust clouds. Their models offered compelling evidence for Hayashi's ground-breaking work that provides a theoretical basis for star formation. Later, she worked at Indiana University, NASA's Goddard Space Flight Center, and the University of California. While at NASA, she was the only woman astronomer working at the institution. She received the Apollo Achievement Award in 1969 for her contributions to the first landing on the Moon project. Meanwhile, she organized the first National Astronomy Congress in Turkey. She founded the Astrophysics branch within the Physics Department at the Middle East Technical University, later becoming the Chair of the Department and the Dean of the Faculty. Professor Ezer Eryurt is regarded as the mother of Astronomy in Turkey, where her life dedicated to science has left a tremendous legacy.

FUN FACT
Dilhan Ezer Eryurt bequeathed all of her assets to the Directorate of National Education in Turkey for the construction of a kindergarten and girl's dormitory.

Art: The Fabric of Space-Time – Deep Field

November 2022

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
31	1	2	3	4	5	6
7 1867 - Anniversary of the birth of Marie Sklodowska Curie 1878 - Anniversary of the birth of Lise Meitner	8	9	10 World Science Day for Peace and Development (UNESCO 31C/ Resolution 20)	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29 1926 - Anniversary of the birth of Dilhan Ezer Eryurt	30 St Andrew's Day (Scotland)	1	2	3	4

October '22

M	T	W	T	F	S	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

December '22

M	T	W	T	F	S	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Notes

Beatrice Muriel Tinsley

1941-1981

Beatrice Tinsley was a true pioneer of the chemical evolution of galaxies. In her 1980 review article on "Evolution of the Stars and Gas in Galaxies" we find a brilliant explanation of the modelling of galaxies and beautiful predictions, which we still discuss today using data from large telescopes and fast supercomputers. Her family emigrated from England to New Zealand when she was young and she made up her mind to become an astrophysicist at the age of 14. In 1963 she moved to the United States. With her PhD dissertation awarded by the University of Texas in 1967, she started her journey into achieving international fame as a cosmologist. Beatrice was the first to show that contrary to expectations, the universe will never collapse, but will always continue its expansion. In 1978, she became the first female Professor of Astronomy at Yale University. Her shining career was snuffed out prematurely when she died from cancer at the age of 40. Professor Tinsley's research continues to be developed today.

FUN FACTS

- Beatrice played violin in the New Zealand National Youth Orchestra while in High School.
- Mount Tinsley, a mountain in Fiordland, New Zealand was named in her honor. It is located in the Kepler Mountain range, height 1537 m, 15 km west of Te Anau in Manapouri, GR.
- Asteroid 3087 Beatrice Tinsley, a minor planet, discovered at Mt John Observatory, New Zealand in 1981 was named for her.
- The University of Canterbury dedicated the Beatrice Tinsley Building for New Zealand Astronomy and Astrophysics in her honor.

''Let me be like Bach, creating fugues
Till suddenly the pen will move no more.
Let all my themes within – of ancient light
Of origins and change and human worth –
Let all their melodies still intertwine,
Evolve and merge with growing unity,
Ever without fading
Ever without a final chord ...
Till suddenly my mind can hear no more.``

-Beatrice Tinsley

Art: The Fabric of Space-Time – Spiral Galaxy

December 2022

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
28	29	30	1	2	3	4
5	6	7 1979 - Anniversary of the death of Cecilia Payne Gaposchkin	8	9	10	11 1909 - Anniversary of the birth of Toshiko Yuasa
12	13	14	15	16	17	18
19	20	21 Winter Solstice 2148 UTC	22	23	24	25 Christmas Day
26 Boxing Day	27 Bank Holiday	28	29	30	31	1

November '22

M	T	W	T	F	S	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

January '23

M	T	W	T	F	S	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

Notes

	Notes

Schedule	M	T	W	T	F

Funded by the Horizon 2020 Framework Programme of the European Union

This is a promotional Academic calendar commemorating “Women Scientists Who Made Nuclear Astrophysics”, presented by COST Action ChETEC (CA16117) for the development of young scholars.
A digital version can be freely downloaded at the weblink: www.chetec.eu, along with the associated poster on the same topic.

Goals

“A powerful way to study the evolution of the cosmos is via the chemical fingerprints left by the nuclear reactions that take place in stars. These are the goals of our ChETEC (pronounced [ketek]) COST Action, which stands for Chemical Elements as Tracers of the Evolution of the Cosmos.”
Weblink: www.chetec.eu

Acknowledgements

COST Action ChETEC (CA16117) is supported by COST (European Cooperation in Science and Technology).
COST is a funding agency for research and innovation networks. Our Actions help connect research initiatives across Europe and enable scientists to grow their ideas by sharing them with their peers. This boosts their research, career and innovation. Weblink: www.cost.eu

The Joint Institute for Nuclear Astrophysics - Center for the Evolution of the Elements, JINA-CEE, is an interdisciplinary multi-institutional center to advance knowledge in nuclear astrophysics.
JINA-CEE is a US National Science Foundation Physics Frontiers Center, supported under Grant No. PHY-1430152. Website: www.jinaweb.org

The International Research Network for Nuclear Astrophysics, IReNA, connects six interdisciplinary research networks across 3 continents to foster international collaboration, complement and enhance research capabilities,
thus accelerating progress in nuclear astrophysics. IReNA is a US National Science Foundation AccelNet Network of Networks supported under Grant No. OISE-1927130 Website: www.irenaweb.org

We also acknowledge funding from the following: LIBPhys, NOVA FCT and SPF (Portuguese Physical Society) and Romanian Ministry of Education and Research, the Program Nucleu, within MCI, project number PN19150201/16N/2019 and project number PN-III-P1-1.2-PCCDI-2017-0839/19PCCDI/2018, within PNCDI III and H2020-MSCA-NIGHT-2020/954638 - DoReMi-RO and the Netherlands Organization for Scientific Research (NWO) as part of the Vidi/Aspasia program BinWaves (639.042.728, PI de Mink) and The Hebrew University of Jerusalem and the Konkoly Observatory and the Hungarian Academy of Sciences.

We thank E. J. Jacobsen for proofreading the Danish translation and A. Becerril Reyes, JINA-CEE and E. Bányai and B. Cseh, Konkoly Observatory for help with the calendar printing and distribution.

Art

Collectively, the background art images form a series titled: “The Fabric of Space Time” - a fantasy cosmos filled with beautiful kaleidoscopic stars, each representing one scientist in this calendar anda simulated space time convoluted into flowing, hexagonal building blocks that describe cosmic events such as mergers and novae and supernovae.

Jožef Stefan Institute, Ljubljana, Slovenia