

# Nicholas Christofilos

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**Nicholas Constantine Christofilos** (Greek: Νικόλαος Χριστοφίλου; December 16, 1916 – September 24, 1972) was a Greek physicist.

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## Career

Christofilos was born in Boston, Massachusetts and raised in Greece. He attended the National Technical University of Athens at age 18, and graduated with a degree in Electrical and Mechanical Engineering in 1938. He remained in Greece during World War II, working for an Athens elevator maintenance company during the Nazi occupation. He later founded his own elevator company. During all of this, he maintained an amateur interest in accelerator physics and high-energy particle physics, and studied German and American texts on the subjects extensively.

In 1946 he independently developed ideas for a synchrotron and in 1949 he conceived the strong-focusing principle. Rather than publishing in a journal he submitted a patent application in the US<sup>[1]</sup> and Greece. His discovery went unnoticed for several years, and strong focusing was rediscovered by Ernest Courant et al. in 1952<sup>[2]</sup> (who acknowledged his priority one year later),<sup>[3]</sup> and applied to accelerators at BNL, Cornell and CERN.

Christofilos was offered a position at Brookhaven in 1953. In 1956 he joined Lawrence Livermore National Laboratory (LLNL) to continue his work on the Astron, a proposed fusion reactor under the Sherwood Project. At LLNL, Christofilos worked on a number of military projects. He became a member of JASON and was the principal behind Operation Argus, a series of high-altitude nuclear detonations intended to create a radiation belt in the upper regions of the Earth's atmosphere as a defence against Soviet ICBMs.

In 1958 Christofilos proposed Extremely Low Frequency (ELF) waves as a way to communicate with submerged submarines, and subsequently invented the ground dipole, the only antenna that has proven practical for use at ELF frequencies. His ideas were implemented by the U.S. Navy in Project Seafarer, which constructed huge ELF transmitter facilities in Michigan and Wisconsin consisting of 56 miles (90 km) of electric transmission line. These were used from 1985 to 2004 for worldwide communication with U.S. nuclear submarines.

In 1963 he was awarded the Elliott Cresson Medal.

## References

### Footnotes

1. US patent 2736799 (<https://worldwide.espacenet.com/textdoc?DB=EPODOC&IDX=US2736799>), Nicholas Christofilos, "Focussing System for Ions and Electrons (<http://www.google.com/patents?vid=2736799>)", issued 1956-02-28, filed 1950-03-10.
2. Courant, E. D.; Livingston, M. S.; Snyder, H. S. (1952). "The Strong-Focusing Synchrotron—A New High Energy Accelerator". *Physical Review*. **88** (5): 1190–1196. Bibcode:1952PhRv...88.1190C (<http://adsabs.harvard.edu/abs/1952PhRv...88.1190C>).
- doi:10.1103/PhysRev.88.1190 (<https://doi.org/10.1103/2FPhysRev.88.1190>).
3. Courant, E. D.; Livingston, M. S.; Snyder, H. S.; Blewett, J. (1953). "Origin of the "Strong-Focusing" Principle". *Physical Review*. **91**: 202–203. Bibcode:1953PhRv...91..202C (<http://adsabs.harvard.edu/abs/1953PhRv...91..202C>). doi:10.1103/PhysRev.91.202.2 (<https://doi.org/10.1103/2FPhysRev.91.202.2>).

## Sources

- Foster, J. S.; Fowler, T. K.; Mills, F. E. (1973). "Nicholas C. Christofilos (obituary)". *Physics Today*. **26**: 109–115. Bibcode:1973PhT....26a.109F (<http://adsabs.harvard.edu/abs/1973PhT....26a.109F>). doi:10.1063/1.3127921 (<https://doi.org/10.1063/2F1.3127921>).
- A.C. Melissinos (University of Rochester) (1993). "Nicholas C. Christofilos: His contributions to physics." (<http://www.hep.princeton.edu/~mcdonald/accel/christofilos.pdf>) (PDF). *Proceedings, Advanced accelerator physics*: 1067–1081.

## External links

- Melissinos, A.C. (1993). "Nicholas C. Christofilos, His Contributions to Physics" (Talk), *CERN Accelerator School Proceedings 1993*, Rhodes, Greece (<http://puhep1.princeton.edu/~mcdonald/accel/christofilos.pdf>)
- Coleman, Elisheva (2004). *Greek Fire – Christofilos and the Astron Project in America's Fusion Program*, Princeton University Junior Thesis (<http://w3.pppl.gov/ppst/docs/coleman.pdf>)
- Ivoox.com ([http://www.ivoox.com/nicholas-christofilos-audios-mp3\\_rf\\_511775\\_1.html](http://www.ivoox.com/nicholas-christofilos-audios-mp3_rf_511775_1.html))
- Pictures of Nicholas Christofilos (<https://www.flickr.com/photos/llnl/5794558555/>)

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Categories: 1916 births | 1972 deaths | Accelerator physicists | American people of Greek descent | Greek physicists | People from Boston | Members of JASON

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