

## Obituary: Nils Abramson (1931 – 2019)

Dr Nils Hugo Abramson was born on 22 October 1931 in Stockholm - son of Hugo and Ingeborg (Landin) Abramson. He was a professor at the Department of Production Engineering at the Royal Institute of Technology (RIT), Stockholm. Sweden.

Abramson received his Master of Engineering in 1960 and Ph.D. in Engineering in 1970 from RIT. He was a Docent (senior lecturer, reader) there 1974—1981 and in 1981 he became a professor in *Industrial Metrology*. In 1996 he received an honorary *Doctor in Physics* degree at RIT. After 1996 he continued to work at the institute as a professor emeritus.

His main contributions are to the field of optical metrology and hologram interferometry. His creative and innovative work includes hologram interferometry - the *Holo-diagram*, one of the first methods to make and to evaluate holographic interferometry fringes. He also introduced sandwich holography, a tool for hologram interferometry, having a broad range of applications. The deformation, visualized through the interference fringes, of a large milling machine is an example of Abramson's industrial holographic measurements, shown here. (Fig.1)

In the late 1960s Abramson with colleagues at RIT started the *Laser Research Group* to develop laser measuring methods for the Swedish industry. In the early 1970s, *Holovision AB* was formed with Abramson as a partner, for recording commercial display holograms. Later, this company became partly owned by the Swedish newspaper *DAGENS NYHETER*.

Abramson devoted many years on the *Light-in-Flight* holographic recording technique using very short laser pulses. Applying this technique, he was able to visualize numerous optical principles, including refraction, diffraction, and phase delay. An example shown here is how a short light pulse is passing through a positive lens and, slightly delayed caused by passing through glass, focused to a point. (Fig. 2)

During many years he studied the theory of relativity, using the *Holo-diagram* and holographic techniques to describe relativistic phenomena. For example, he explained how the Minkowski diagram in relativity is related to holography and his diagram.

Abramson remained and worked at RIT during his entire career. However, in 1985, he was a *Meyerhoff Professor* at the Weizmann Institute of Science in Israel. A few of his experiments on *Light-in-Flight* recordings, took place at other university laboratories, giving him access to lasers with ultra-short laser pulses. In 1986 he performed experiments at Northwestern University, outside Chicago, in Evanston, Illinois, USA.

Abramson was giving lectures, seminars and conference papers at many different places around the world. Every year in the summer he was lecturing at *Lake Forest College* in Illinois during Professor Tung H. Jeong's Holographic Workshops. He was also frequently lecturing at universities both in Lund, Sweden, and in Copenhagen, Denmark.

He is the author of many academic papers published in *Applied Optics* by OSA and *Optical Engineering* by SPIE in the USA. He is also the author of two books: *Making and Evaluation of Holograms* (1981) and *Light in Flight, or the Hologram - the Columbi Egg of Optics* (1996).

Abramson's most recent paper was published in September 2018 on "Asymmetric Special Theory of Relativity" in *Journal of Modern Physics*, pp. 471-478.

Abramson has received several awards, including the *Arnberg Prize* in 1980 by the Royal Society of Sciences in Sweden. *The Great Prize* of the Royal Institute of Technology for Internationally Recognized Research on Holographic Measurement Methods in 1985; *The Gold Medal* in 1995 for Pioneering work on Laser Metrology, presented by the Royal Swedish Academy of Engineering Sciences. The 1997 *SPIE Dennis Gabor Award in Diffractive Optics* was awarded to Abramson.

He was a Fellow of the *Optical Society of America* (OSA) and a member of the Society of Photo-Optical Instrumentation Engineers (SPIE).

In his spare time, he was a skier, water-skier and windsurfer. He had a pilot licence and liked to hire and fly airplanes.

Abramson died on 12 March 2019 and is survived by his wife Lena Beronius.

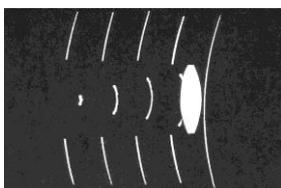
---



*Nils Abramson*



*Fig1. Milling Machine*



*Fig 2. Light in Flight*