

Erik Bergstrand and The Geodimeter

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SUMMARY

Erik Bergstrand, the inventor of the Geodimeter, was brought up in an astronomical observatory as his father was professor of astronomy in Uppsala, Sweden. Erik studied physics in the 1920's and was a keen builder of radio receivers in the early days of broadcasting. In 1939 he got a position as geodesist at the Geographical Survey Office in Stockholm (Rikets allmänna kartverk), as he had suggested a new type of instrument to measure distances by means of light signals, knowing the speed of light. At that time the most recent values of the speed of light were those of Michelson (1927) and his assistants Pease and Pearson (1935) in the US. Bergstrand however chose the Kerr cell method used by e.g. Karolus in Germany and Anderson, US. Bergstrand was allowed to join the new Nobel Institute of Physics (a research institute) in Stockholm, under Nobel laureate Manne Siegbahn. At the institute he built an experimental model with two stations for both light and radio signals. This model was soon replaced by the single Geodimeter instrument with a mirror at the opposite point. The first measurements were made near Stockholm in 1947 (published in 1948) and in 1948 Bergstrand had a value of the speed of light. The experimental Geodimeter model was shown at the IUGG and IAG conference in Oslo in 1948. The famous AGA company (lighthouses, gas, also radio production) built a prototype, shown in Brussels 1951 and AGA produced the first series of the Geodimeter (or NASM). The first ten instruments were used in the US, Denmark, UK, Australia and Sweden. Their main use was to replace baselines and to give very accurate measurements e.g. in the establishment of satellite tracking stations. Later on many Geodimeter models followed for all types of surveying work.

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