



## Obituary

On the 6<sup>th</sup> of February, at the age of 93, Arne E. Bjerhammar passed away, less than one year after his wife Carin.

He was born in 1917 at Båstad, southern Sweden, and after completing high school he became a student at the Royal Institute of Technology (KTH) in Stockholm, where he achieved a M.Sc. degree in Surveying in 1942 and the doctor's grade in Geodesy in 1948. He was soon appointed Docent/Associate professor of Geodesy, and, in 1952, Professor of Geodesy at KTH, a chair he was to hold until he retired in 1983.

As a professor he soon became popular among students for his relaxed style and humour. Later, in the 1970-ties usually two weeks a year were spent abroad (in Finland, Italy, Iceland, Spain and Greece) with a group of students, mainly for practical teaching of planning and measuring of geodetic networks. However, the project in Finland in 1970 was also a research project on the precise Niinisalo baseline to gathering EDM and meteorological data for estimating the velocity of light. Furthermore, in 1973, at the historical Thingvellir with surroundings in Iceland, a project for repeated observations, aiming at estimating crustal/plate motion, was started up.

His research covered many fields of geodesy. As a result of his doctor's dissertation "A contribution to the methods of optical distance measuring, specially with regard to the problems of automatic plotting" and for his refinement of the modulation system of the Swedish EDM instrument Geodimeter he became one in the record of Swedish inventors. However, many geodesists (and mathematicians) know him for the first time for his new matrix algebra with generalized matrix inverses, published in 1955 (in Swedish) and 1957 (in English). Seven years later, fascinated by M.S. Molodenskiy's new approach to solve the basic problems of physical geodesy, he presented his original idea of analytical downward continuation of the gravity anomaly to an internal sphere ("the Bjerhammar sphere"), a method that was first met with scepticism by the geodetic community. However, supports were to come, and Bjerhammar was particularly proud and happy to say that, after a long discussion at the IUGG meeting in Berkeley in 1963, Helmut Moritz was convinced and appreciated his method. In 1969 Torben Krarup wrote in his well-known contribution to the foundations of physical geodesy: "As far as I can see, the most important point of view introduced in physical geodesy since the appearance of Molodenskiy's famous articles is Bjerhammar's idea of calculating an approximation of the potential by collocation, at the points where gravity anomalies have been measured, of potentials that are regular down to a certain sphere situated inside the surface of the

earth.” Among other areas of interest are his original proposals of recovering the Earth’s gravity field by using the energy integral for satellites (1967) and by the theory of general relativity using atomic clocks (1975 and 1985) as well as his studies on the correlation between the gravity field and the Fennoscandian land uplift phenomenon in the 1970-ties. He is the author of about 200 scientific articles, including 2 textbooks, many of the articles published as internal KTH reports. He chaired the IAG study group on Statistical Methods in Geodesy (1963-1967).

His sabbatical leaves can be summarized as the stays as a Visiting Scientist at The Research Institute for Geodetic Sciences in Alexandria, USA, in 1967-1968, at Stuttgart University (as an A-v-Humboldt scholar) in 1982, National Geodetic Survey in Washington, D.C., in 1984 and at Ohio State University in 1985-1986.

His research was followed by national and international recognition, confirmed by several prizes and rewards such as the German Gauss medal (1969), The Great Prize of KTH (1982), IAG’s Levallois medal (1987) and the Rossby Prize of the Swedish Geophysical Society (1988). He has also been awarded “Nordstjärneorden” by his Majesty the King of Sweden. In 1988 he became an honorary doctor of the Technical University of Graz.

Scientific discussions with Arne Bjerhammar were always engaging, intensive, inspiring and inventive; nobody was left unmoved. His demise in 2011 appeared 100 years after the first professor of Geodesy was installed at KTH. By this sad event the last of “the three Swedish kings of geodesy” (Asplund, Tengström and Bjerhammar) is no longer with us.

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