

Hendrik Christoffel van de Hulst

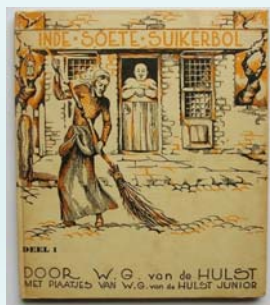


Centenary HC van de Hulst, Leiden, 7 November 2018

1

Henk van de Hulst

- Born 19-11-1918 in Utrecht
- Father schoolteacher
 - Famous author of children's books
 - Many illustrated by Henk's brother Wim
 - The children also appear in the books



Centenary HC van de Hulst, Leiden, 7 November 2018

2



Academic training

- Henk entered Utrecht University in 1936
 - Lectures by Minnaert
 - Worked on atmospheric O_2 lines in solar spectrum
 - Conditions very difficult because of WW II
- Prize Essay competition 1941/1942
 - Organised by J.H. Oort and H.A. Kramers
 - Topic: *Small dust particles in interstellar space*
 - Two honourable mentions: Henk, and Dirk ter Haar
 - Henk studied for a year, mostly in isolation, and became very interested in light scattering
 - This became the subject of his cum laude PhD in 1946
 - Participation brought him in contact with Jan Oort



Neutral Hydrogen

- Detection of radio waves from the Universe
 - Karl Jansky, Grote Reber
- Oort wanted to know if there was a spectral line
 - Asked Henk to 'look into this'
 - This involved the 'flat tire incident' in Utrecht
- NAC at Leiden, 15-4-1944
 - Henk predicted that the 21cm hyperfine structure line should be observable
 - Re-enacted in 1955
- Discovery in 1951 in USA, Australia, Netherlands
 - Led to field of radio astronomy



Plate 1.6. Van de Hulst reading his paper on the 21 cm hydrogen line. (This photograph taken in 1955 is a reconstruction of the 1944 meeting). (By courtesy of H. C. van de Hulst, Leiden)

Centenary HC van de Hulst, Leiden, 7 November 2018

6

Post PhD

- Postdoc at Yerkes Observatory

- At the time one of the strongest astronomy groups in the world
- Chandrasekhar, Herzberg, Kuiper, Strömgren, Struve, ...
- Link with University of Chicago
- And McDonald Observatory



- Invited back to Leiden by Oort

- Lector 1948 ⇒ Professor 1952
- Emeritus 1984

- Involved in early HI studies (Kootwijk)

- Influential lecture notes radio astronomy



Centenary HC van de Hulst, Leiden, 7 November 2018

7

Light scattering

- Lifelong interest

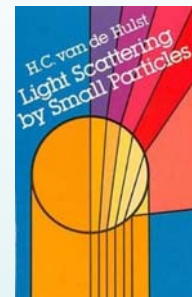
- PhD thesis: *Optics of Spherical Particles*

- Two very influential books

- *Light Scattering by Small Particles* (1957)
- *Multiple Scattering I & II* (1980)

- Applications beyond astronomy

- Earth observations, dentistry, ...



Centenary HC van de Hulst, Leiden, 7 November 2018

8

Space science

- Oort asked Henk on 15-11-1958 to represent him at a meeting in London, to discuss space astronomy
- Henk came back as first President of COSPAR
- Strong involvement in (inter-)national developments
 - Creation of SRON (via GROUPE)
 - COSPAR, ESRO ⇒ ESA
 - Missions: ANS, IRAS, COS-B, FOC on HST
 - Served on Space Telescope Institute Council



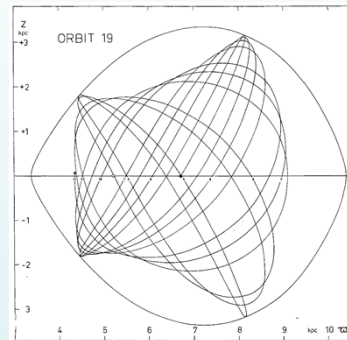
2. In discussion with H.C. van de Hulst, at the reception on the occasion of Oort's quadrennial jubilee as a staff member of Leiden Observatory, 1964.



Galactic dynamics

■ 1952-1962

- Determination HI rotation curve
- Schmidt's (1956) mass model for the Milky Way
- Ollongren's (1962) numerically computed stellar orbits did not fill region allowed by E, L_z
 ⇒ effective third integral of motion in axisymmetric models



- Henk derived approximate third integral by local fitting with separable potential
 - Revival of interest in 1982, for triaxial geometry

Centenary HC van de Hulst, Leiden, 7 November 2018

11

Henk van de Hulst

■ Broad interests

- 29 PhD theses supervised
- Wide-ranging topics
 - Cosmic rays, Earth magnetosphere, galactic dynamics, galaxy clusters, optics of porous particles, solar system, stellar atmospheres, Sun, γ -rays, X-rays, etc.

- Razor sharp intellect and excellent diplomatic skills

- Many prestigious awards
 - But kept this quiet

- Non-conformist



Carla Rodenberg 1995

Centenary HC van de Hulst, Leiden, 7 November 2018

12