Stellingen

behorende bij het proefschrift

Investigations of Binary Galaxies

1. The observed $z-$velocities, in the solar neighbourhood, are composed of a random plus a hydrodynamical term. Both terms enter in the calculation of V_z-dispersions. Improper care of the hydrodynamical velocity gradient is probably responsible for the mass discrepancy problem in the local zone, i.e., motion that is due to large-scale hydrodynamical interaction, in the galactic disk, is interpreted as being due to local gravitational interaction. When the hydrodynamical term is properly considered, in the Boltzmann equation, the dynamical and observed mass densities are reconciled.

D.S.L. Soares, *M.Sc. Thesis*, 1982, Belo Horizonte

2. The most reliable way of determining the dynamical local mass density is to consider young tracers (e.g., OB stars), and make a proper account of their observable systematic motions. The alternative approach, i.e., the use of the old concept of *isothermality* of a given tracer, is not anymore scientifically convincing.

3. *It would appear that there is an urgent need for a large economical radio telescope in the southern hemisphere similar to the 91 m dish at Green Bank National Radio Astronomy Observatory, devoted primaly to the determination of 21 cm line redshift of galaxies.*

H.J. Rood, *Astrophys. J. Suppl. Series*, **49**, 111 (1982)

4. The presence of dust and neutral hydrogen in cooling flow systems is closely related to the presence of optical filaments. The related physical processes are very similar to those observed in spiral patterns, namely, the ones which are the consequences of compression zones produced by shock fronts.

5. Dust and neutral hydrogen in spiral galaxies are mostly confined to a disk subsystem, while in cooling flow systems they are spread over a spherical region which is often much bigger, in radius, than spiral galaxy disks. This is probably the reason why they are hardly detected.

6. Early jaboticabas appear $10 - 20$ days after the southern autumn equinox and, in their full strength, $10 - 20$ days after the spring equinox.

7. Given the past history of football, it is fair to conclude that there are essentially two football styles, namely, type I (prototype: Brazil, 1970) and type II (prototype: The Netherlands, 1974).

8. The greatest inventions of mankind are the radio and the bicycle.

9. It is urgent to create a powerful broadcasting institution, runned by the United Nations, in order to counterbalance political and ideological biasses presently existent on radio and television news. A United Nations broadcasting system would work against mass manipulation and would defend interests of all member states, aiming at a more just world.

10. A modern query (cf. I. Newton, *Opticks*) in the field of gravitation can be formulated as follows:

Would not Isaac Newton solve the dark matter problem?

11. *Montani semper liberi*

Inscription on monument at the station square — Belo Horizonte

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Groningen, 11 augustus 1989

Domingos Sávio de Lima Soares

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