Lynden-Bell: $i = 55^o - 60^o \pm 10^o$
$\theta = 68^o \pm 10^o$
I think this is good agreement. I took $\theta = 64^o$.

THE STELLAR COMPONENT OF THE MAGELLANIC STREAM

William E. Kunkel

The problem of the Magellanic Stream (MS) is re-examined considering also stellar systems (globular clusters and dwarf spheroidal galaxies) lying between 25 and 250 kpc from the Galactic center (Kunkel and Demers 1976). The distribution of these systems is shown to be non-random, with a planar component whose inclination to the Local Group is 43^o, and to the local supergalaxy exceeds 60^o. The velocity distribution of members of the group shows a symmetry typical of debris associated with a disruptive event at perigalacticon of a victim moving in an elliptical orbit.

These data are examined in terms of tidal disruption affecting the Magellanic Cloud system, with a view to constraining the multidimensional character of admissible solutions from modelling efforts using computer simulation. The observed angle between the plane of the MS and that of the stellar or Magellanic Plane Group (MPG) is explained in terms of one being residue from a bridge and the other from a tail. The angle depends to a first approximation on only the mass ratio of the victim to the perturber, which is found to be 0.028, consistent with classical estimates for the masses of the LMC and the Galaxy.

Color-magnitude studies of the stellar systems, as well as the marked composition difference between the MS and the Magellanic Clouds point to a considerable age for the epoch of the most disruptive event, possibly just less than the age of the Galactic globular cluster system.

The sense of orbital motion (which also determines the status of bridge or tail) is determined independently from the age of the oldest (and most numerous) stellar component in the Wing of the Small Cloud, from the dominance of HI in the MS and of stars in the MPG, and from the uniformity (or its lack) of debris material in position along the debris orbits.

The model most favored by these arguments moves in a sense opposite to that of Davies and Wright (1977), and of Lin and Lynden-Bell (1977). The first encounter producing the most pronounced disruption (and much of the MPG and MS) occurred some time ago; the current position of the Magellanic Clouds near perigalacticon correspond to a second or possibly subsequent encounter with relatively mild interaction; the orbital period is of the order of 5×10^9 years. The total Galactic mass lying inside perigalacticon consistent with this model is a factor of 3 or 4 greater than the classical values in current use.

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A more complete account of this work will appear elsewhere.

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DISCUSSION

de Vaucouleurs: May I remind you that the mass of the LMC is about $1.5 - 2.0 \times 10^{10}$ $M_\odot$?

Kunkel: Such a high mass would satisfy interest in a more massive Galaxy. I had used the lower classical value (of 6×10^9 based on McGee and Milton 1966) merely to show that no serious conflict exists for even the older mass estimates.

FINE STRUCTURE IN THE MAGELLANIC STREAM

A. G. D. Philip and A. G. Davis

Dr Erkes and I, of Dudley Observatory, and Dr Ken Turner, of the Carnegie Institution of Washington, used the 300 foot radio telescope at the National Radio Astronomical Observatory, Greenbank, West Virginia in March of 1977 to measure neutral hydrogen at 21 cm in three 2^o strips across positions indicated by Mathewson, Cleary, and Murray (1974, *Astrophys. J.*, 190, 291) as being part of the Magellanic Stream. In region "A" (centred at $\alpha = 22^h44^m$, $\delta = +24\ .5$) no hydrogen was found above the background (3×10^{19} H atoms cm^{-2}). In a revised map Mathewson and Schwarz (1976, *Mon. Not. R. astr. Soc.*, 176, 47P) show that this region is not occupied by the stream. In regions "B" and "C" (centred at $\alpha = 23^h10^m$, $\delta = +11^o$ and $\alpha = 0^h00^m$, $\delta = -17^o$) hydrogen was detected at the velocities found by Mathewson and Schwarz. Maps of the structure found in these regions are shown in Figure 1.

The contour intervals are 10 K km s^{-1}. The maps cover 2^o in declination and about 30 minutes in right ascension. The location of major features of the stream agree with a less detailed map of Mathewson, Murray and Schwarz (1977, preprint). Fine structure can be seen in each map; the stream is broken up into two main components running approximately parallel to each other. The half-power beam width was 10 arcmin.

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