

3D N-BODY SIMULATION OF THE MILKY WAY WITH GAS

R. FUX AND D. FRIEDLI

Geneva Observatory, CH-1290 Sauverny, Switzerland

We present the first self-consistent 3D barred model of the Milky Way including gas, as an evolved stage of an *unsymmetrised* N-body simulation with axisymmetric initial conditions (fig.1). The corotation lies at about 4 kpc and the central gas particles have condensed into a nuclear ring/disc. Distortions of the bar and other odd modes in the stellar distribution (a) affect the gas flow by producing one-side gas voids (b) and instabilities of the nuclear component like tilting, warping and off-centering (c-d). These peculiarities may help to reproduce the intriguing asymmetries and densely populated “forbidden” regions in the Galactic HI and CO ($l-v$) maps (e-f). More details are given in the proc. of IAU Coll. 157 “Barred Galaxies”.

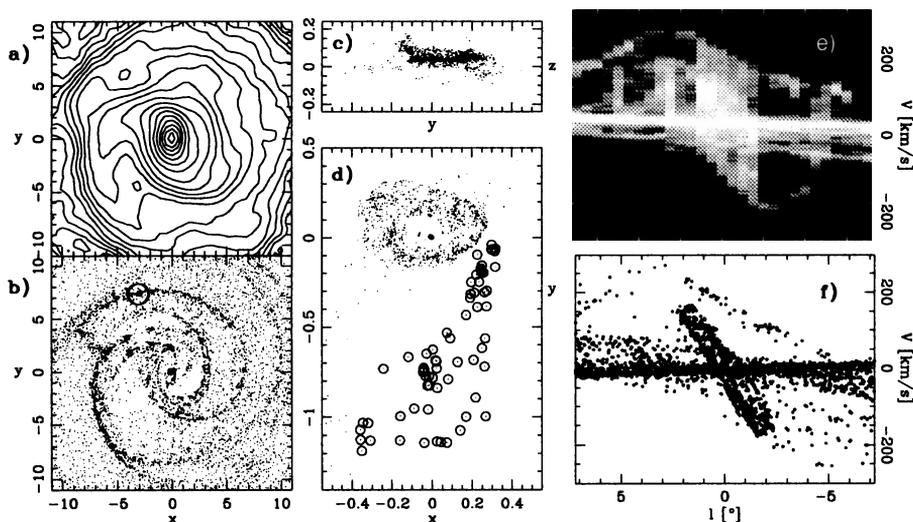


Figure 1. Outputs at $t = 1.5$ Gyr. a) Stellar isodensity curves, face-on. b) Gas particles, same scale. c) Nuclear gas ring, edge-on. d) Central zoom on frame b. The encircled dots are the particles responsible for the $V > 0$ and $l < 0$ strip in frame f. The length unit is 1 kpc. e) CO ($l-V$) map of Dame et al. (1987). f) Model ($l-V$) diagram for an observer located inside the circle of frame b, i.e. trailing the bar major axis by an angle of 20° .