where a is the softening length (the gravitational potential is softened from the Newtonian law in $1/r$, by $1/\sqrt{r^2+a^2}$, to compensate for the restricted number of particles; a is of the order of the cell size). The potential law (5.5) is computed and tabulated once at the beginning of the simulation.

The dimension of the grid is 64 in radius, and $Nz = 256$ in z: indeed in the FFT method, images must be avoided and the useful grid is only half (Nz useful $= 128$) of the total grid. The linear dimensions of one cell in z and r are therefore equal. The CPU time for the FFT varies as $N_c \log N_c$, where N_c is the cell number. This has not been varied here. Besides, the forces computation varies linearly with N, the

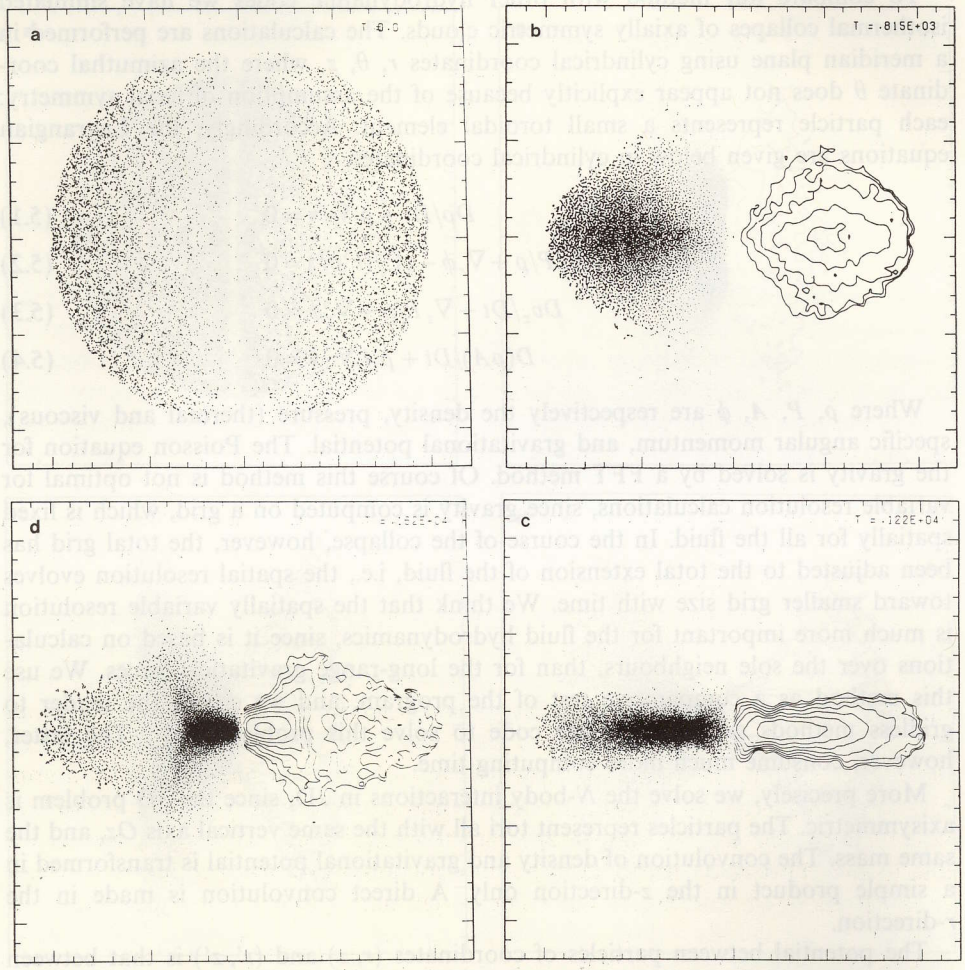

FIG. 5. (a–g) Rotating spherical cloud with uniform initial density. (a) shows the initial distribution of 6000 particles; Figs. 5b–g show the evolution of the collapsing cloud. The times are given in program units (i.e., 127 years). It is possible to distinguish the several steps: (b)–(c), contraction along the Z axis; then collapse in the radial direction and formation of a ring.