Three-integral models for axisymmetric galactic discs

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abstract We present new equilibrium component distribution functions that depend on three analytic integrals in a Stäckel potential, and that can be used to model stellar discs of galaxies. These components are generalizations of two-integral ones and can thus provide thin discs in the two-integral approximation. Their most important properties are the partly analytical expression for their moments, the disc-like features of their configuration space densities (exponential decline in the galactic plane and finite extent in the vertical direction) and the anisotropy of their velocity dispersions. We further show that a linear combination of such components can fit a van der Kruit disc.