

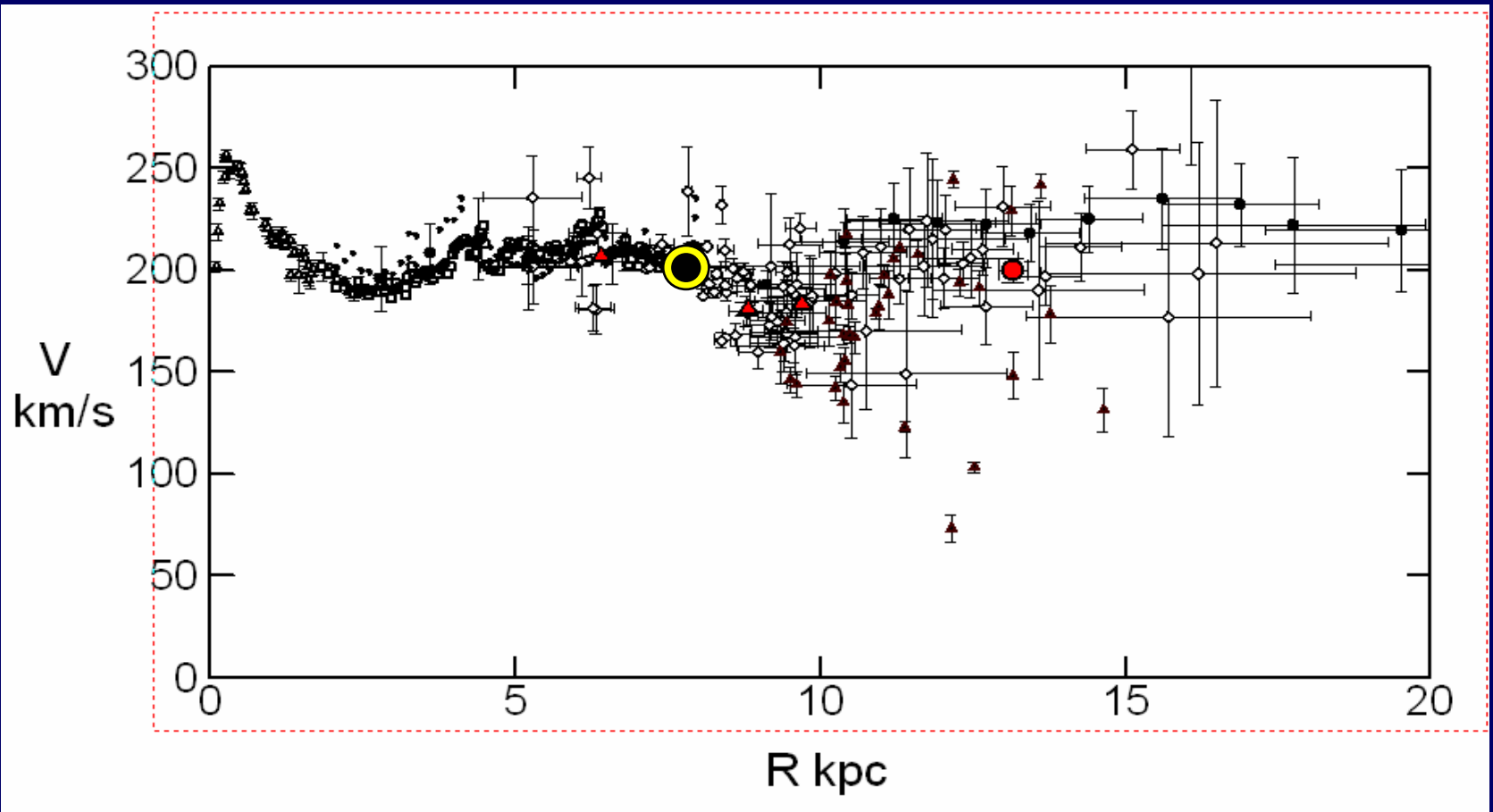
The Local Dark Matter Density

Yoshiaki Sofue

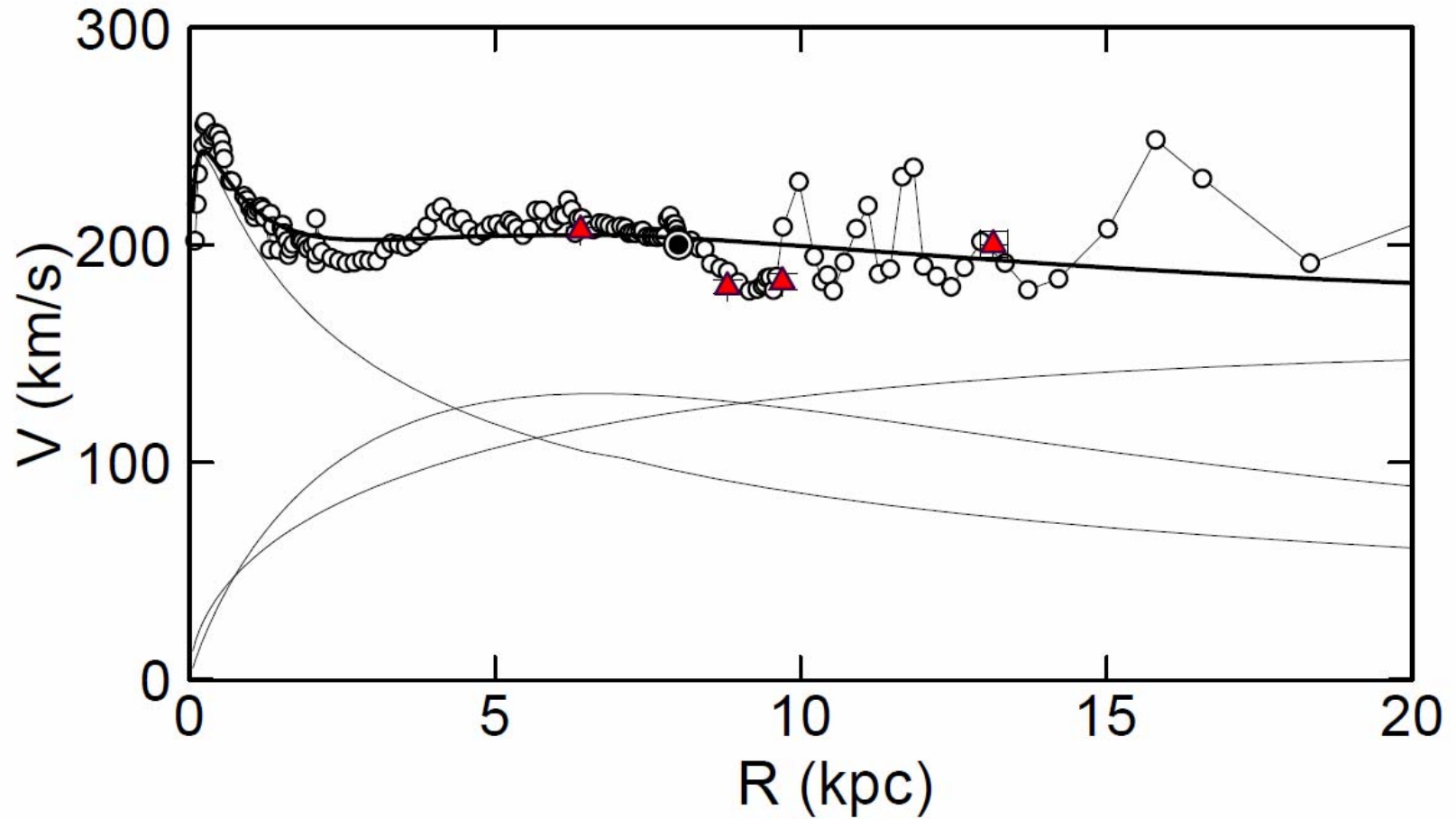
U-Tokyo & Meisei-U.

NDM12, Nara, 2012.06.11-15

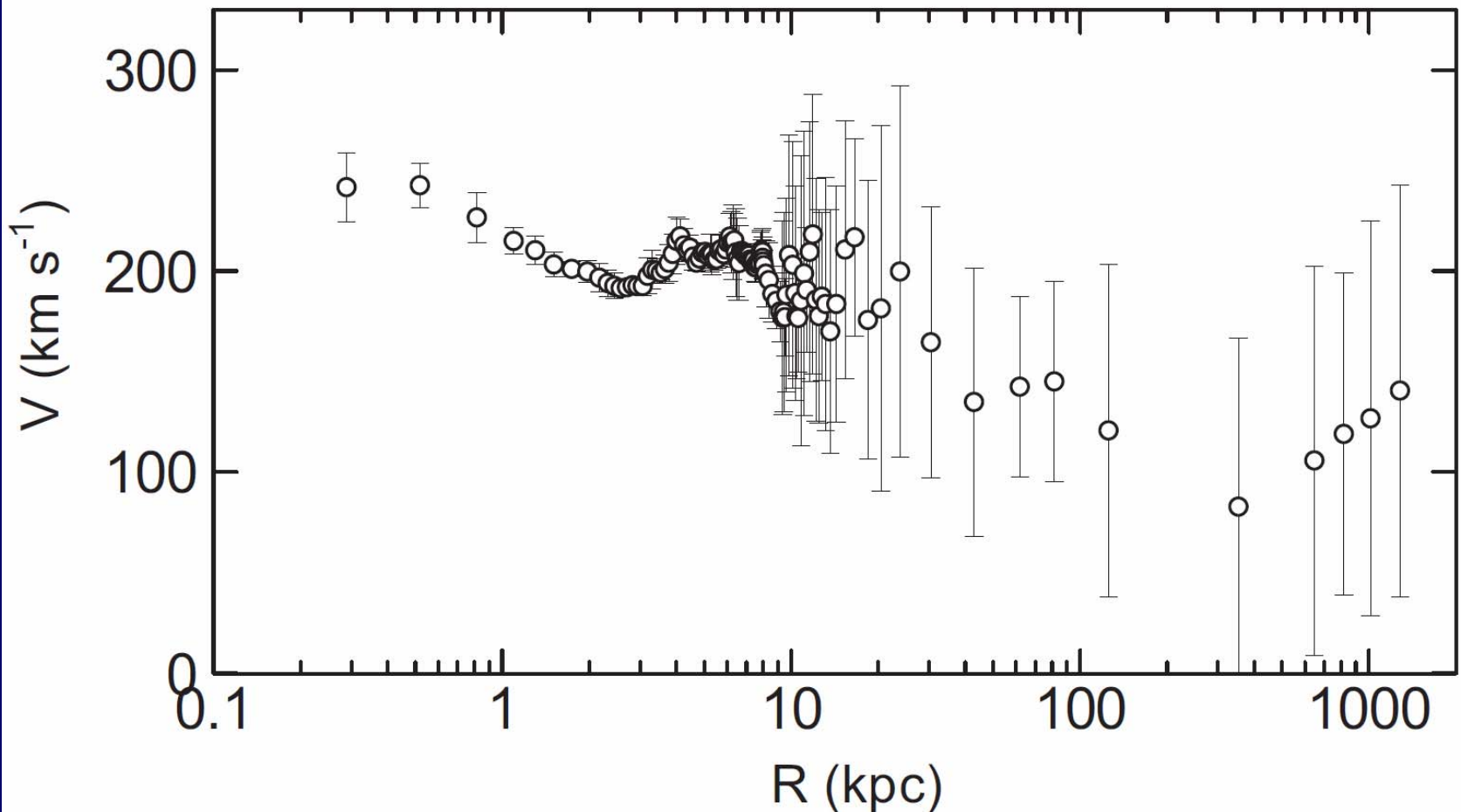
Rotation Curve of the Galaxy is flat at $R < 30$ kpc.



But, not sensitive to DH models.

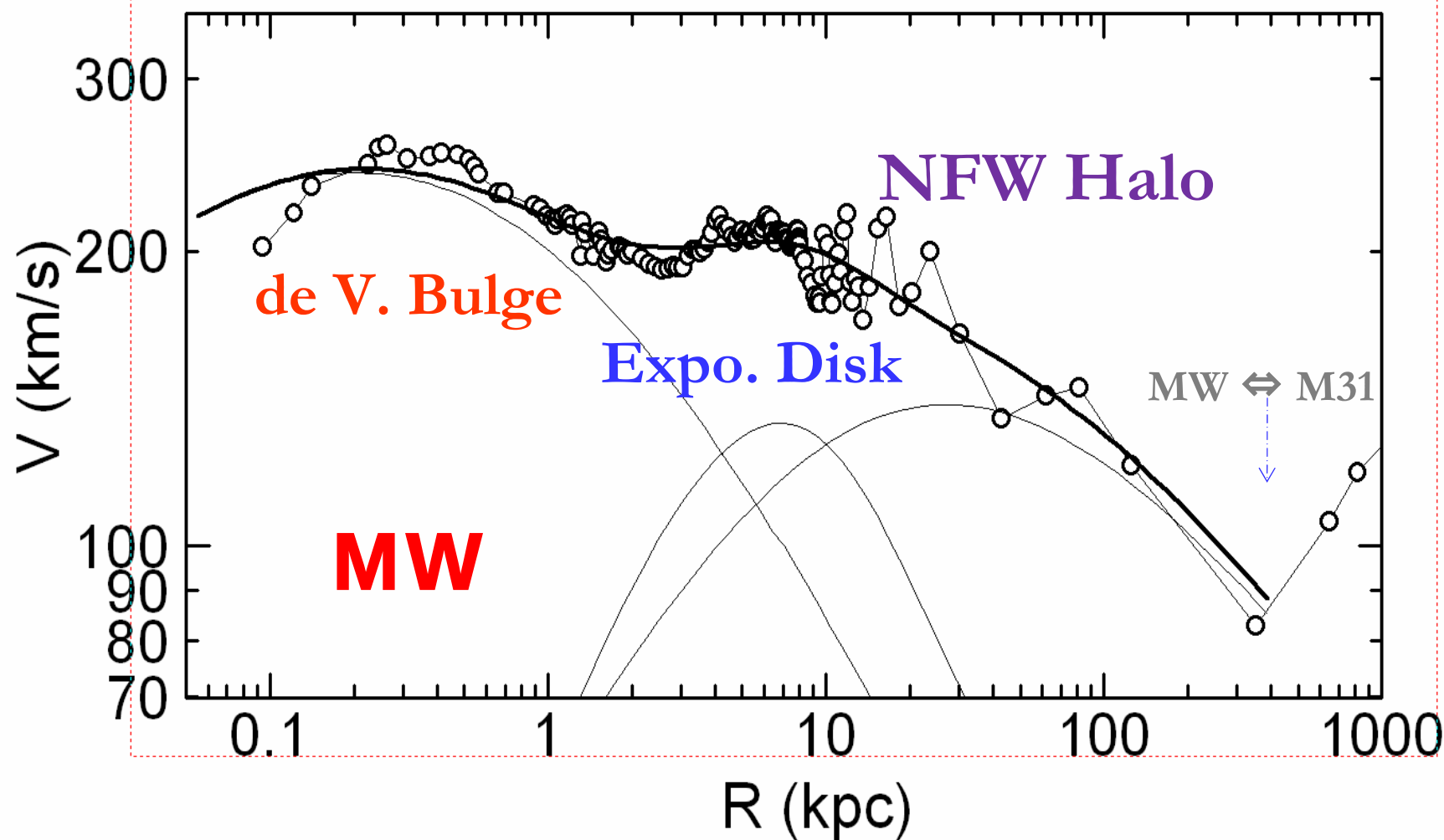


Grand RC beyond $R > 30$ kpc is
sensitive to DH profile.



**Least-sq fitting to GRC yielded
the most accurate galactic
parameters for:**

- 1. de Vaucouleur bulge,**
- 2. Exponential Disk, and**
- 3. Navarro-Frenk-White
Dark Halo.**



The Local Dark Matter Density @ Sun

$$\rho_{\odot} = 0.235 \pm 0.030$$

GeV cm⁻³

$$\mathbf{M} \sim \mathbf{R} \mathbf{V}^2 / \mathbf{G} \Rightarrow \rho_0 \sim \mathbf{M} / \mathbf{R}^3 \sim (\mathbf{V} / \mathbf{R})^2 \sim \Omega^2$$

$V_0/R_0 = \Omega_0 \text{ (km s}^{-1} \text{ kpc}^{-1}\text{)}$	$\rho_0 \text{ (GeV cm}^{-3}\text{)}$
Sofue (2012) $200/8.0 = 25.0$ $(248/8.2 = 30.3)$	0.235 ± 0.030 0.34 ± 0.04
Salucci, et al. (2011) $248/8.2 = 30.3$ $(200/8.0 = 25.0)$	0.43 ± 0.11 0.29 ± 0.07
Weber and de Boer (2010)	$0.2 \sim 0.4$