Homework 3

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February 5, 2020

Question 2

Galaxy Name	Halo Mass ($10^{12}M_\odot$)	Disk Mass ($10^{12}M_\odot$)	Bulge Mass ($10^{12}M_\odot$)	Total ($10^{12}M_\odot$)	$f_{\rm bar}$
MW	1.975	0.075	0.01	2.06	0.041
M31	1.921	0.12	0.019	2.06	0.067
M33	0.187	0.009	0	0.196	0.046

Question 3

(1)
Total Mass of MW is equal to M31, Halo Mass dominates galaxy's total mass.
(2)
Stellar Mass of MW is $0.085 \times 10^{12}M_\odot$, M31 is $0.139 \times 10^{12}M_\odot$. M31 more luminous.
(3)
Dark Matter Mass of MW/M31 = 1.028, and the total mass of MW and M31 are same, so the stellar mass of MW is less than M31.
(4) The $f_{\rm bar}$ of MW is 4.1%, and M31 is 6.7%. That is less than 16% in the Universe. May be we cannot count galaxy stellar halo mass.