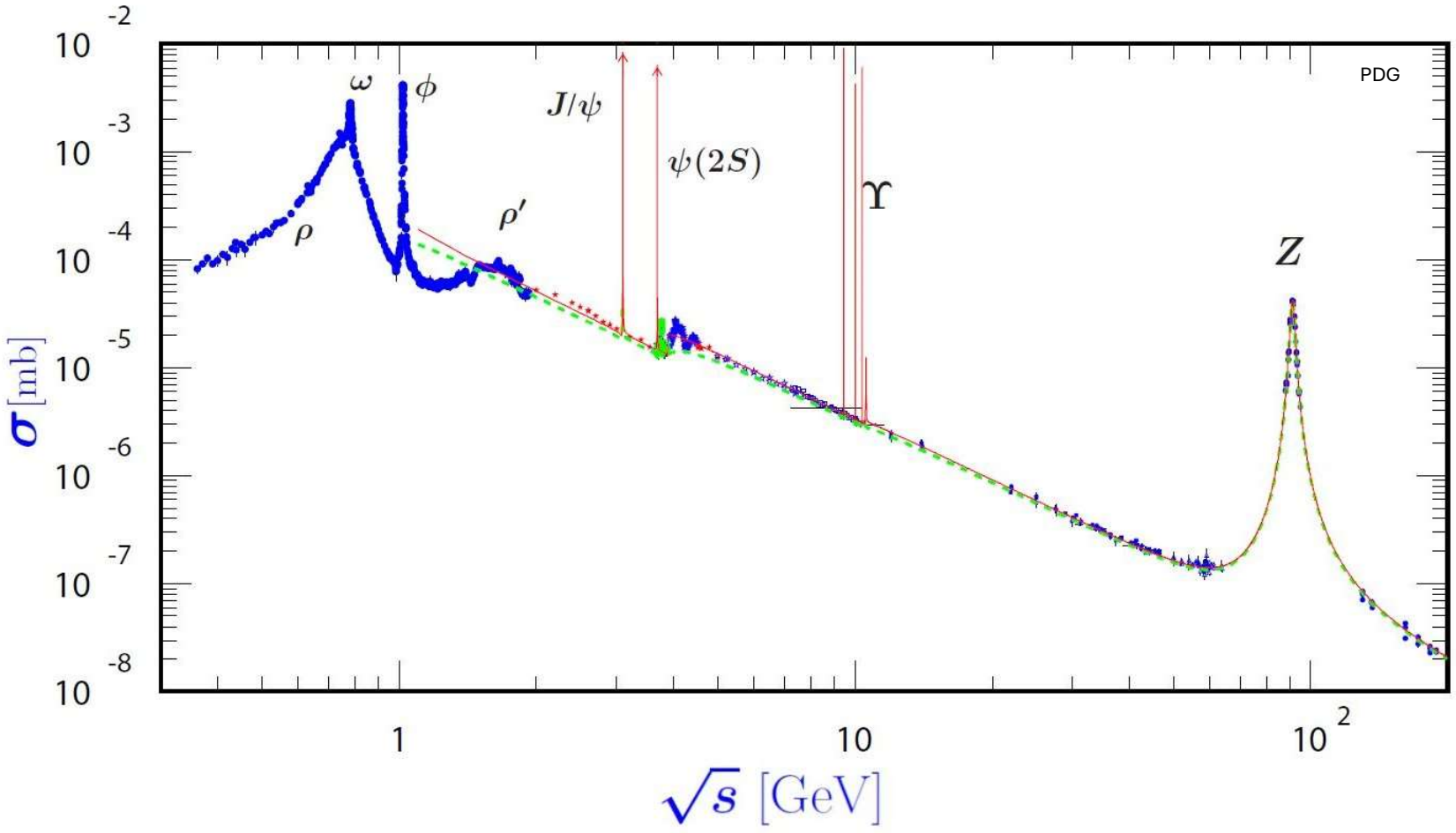
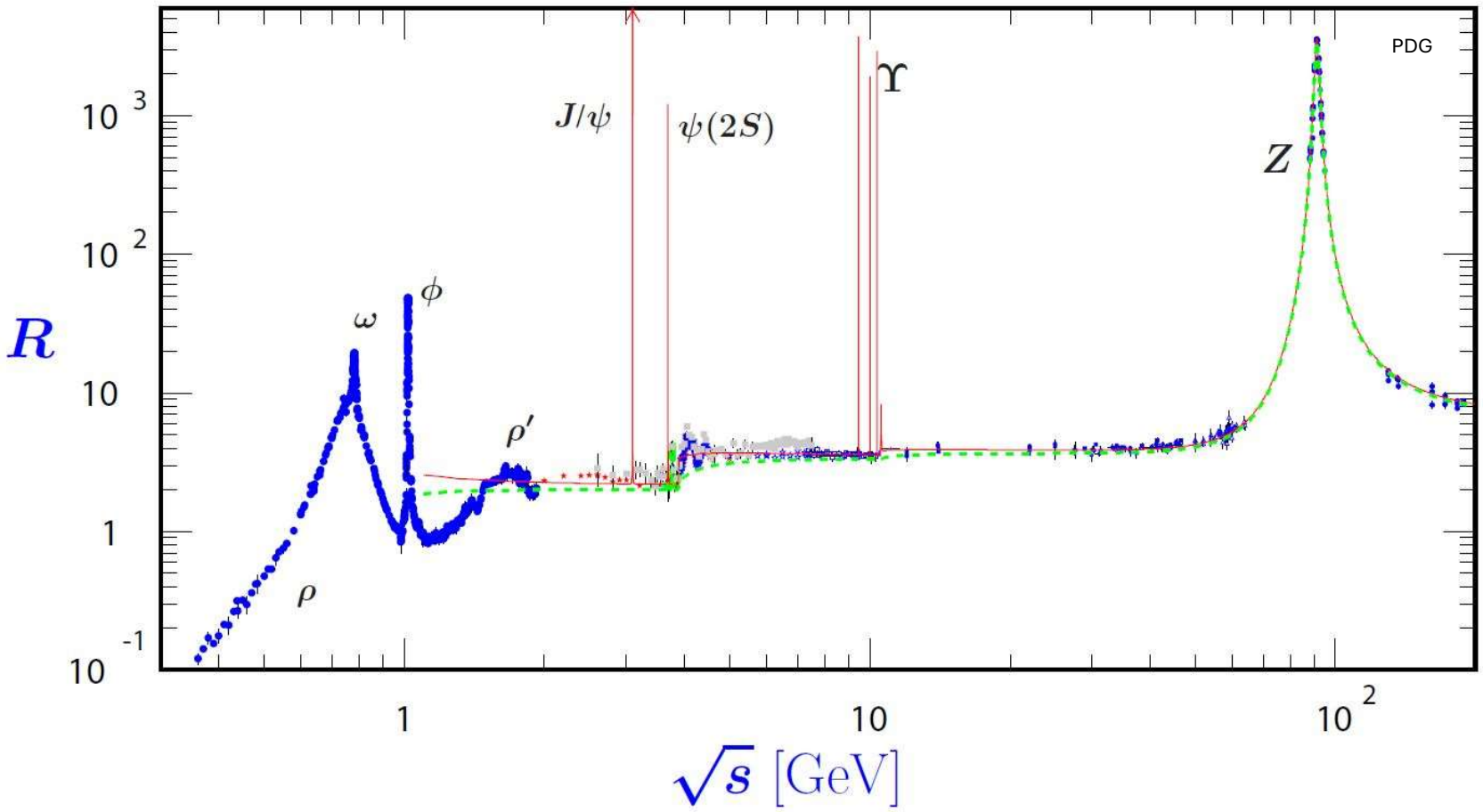
e^+e^- cross section



$R=\sigma(e^+e^-\rightarrow hadrons)/\sigma(e^+e^-\rightarrow \mu^+\mu^-)$



Particles 6

Particle	Mass (MeV/c^2)	Charge (e)	Spin (ħ/2)	Lifetime (s)	Decay modes
u	~ 2	+2/3	1/2	N/A	d+...
d	~ 5	–1/3	1/2	N/A	u+...
c	~ 1300	+2/3	1/2	N/A	d,s+...
s	~ 95	–1/3	1/2	N/A	u,d+...
t	~ 173000	+2/3	1/2	N/A	b,s,d+...
b	~ 4200	–1/3	1/2	N/A	c,s,u,d+...

Quarks are never observed as free particles