SUPERNOVA AS STANDARD CANDLE

--If we can determine the luminosity of the object whose apparent brightness we know, we can determine the distance to that object.

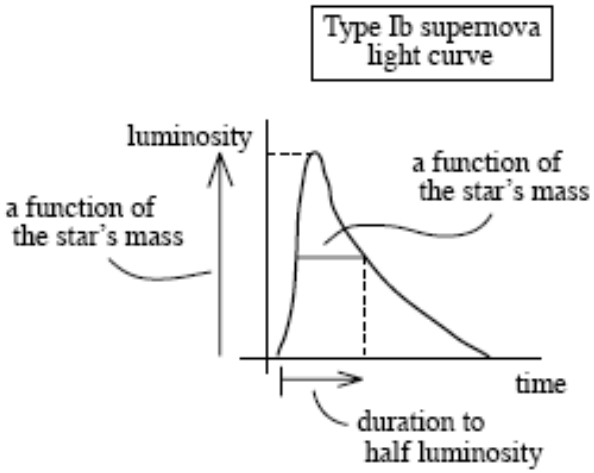
--When the light from a Type Ia supernova arrives here on Earth, we can measure two things: the apparent brightness of the star and the way the apparent brightness diminishes with time.

--In short, we have one of the two pieces of information (the apparent brightness) we need for a distance measurement.

--What is interesting is that the rate at which the apparent brightness of a supernova dims, at least in the beginning, is directly related to how much mass the escaping radiation has to scatter through on its way out of the blown star. This, in turn, governs the maximum luminosity of the blowing star.

--In other words, the amount of mass in the star determines the maximum *luminosity* when the star blows as the bigger the star, the more energy that pours out initially.

--So from the *duration to half apparent brightness* parameter and the associated *maximum luminosity* parameter of the supernova, we gaining the second bit of information needed to determine the distance to the event (hence, Type 1a supernovae can be used as a standard candle).



The duration to half brightness is related to the supernova's luminosity.