Obtain apparent magnitude m from distance d and mass m.

1. estimate Luminosity via mass luminosity relation (link)

$$\frac{L}{L_0} = k * \left(\frac{M}{M_0}\right)^a$$

Source:
Step one returns luminosity L in units of solar luminosity.

2. Calculate absolute/bolometric magnitude from Luminosity

$$M_{bol} - M_{0,bol} = -2.5log_{10}(\frac{L}{L_0})$$

Since L from 1. is already in units of solar luminosity and with $M_{0,bol} = 4.74$ (link) this simplifies to:

$$M_{bol} = 4.74 - 2.5log_{10}(L)$$

… **but** bolometric means V-Band. So instead of $M_0 = 4.74$ I just use $M_{0,K} = 5.08$(link)?

3. Estimate apparent magnitude from distance and absolute magnitude

$$m = M + 5log_{10}(d)$$

Obtain apparent magnitude m from flux F

$$m - m_0 = -2.5\log\left(\frac{F}{F_0}\right)$$

Use 0-magnitude flux in K-Band ie $m_0 = 0$ and $F_0 = 43.6 * 4000 * 978e4\ ph\ /\ s$

Units of F from photutils output in ph/exposure time? … no clues found in documentation.

Sample average: ~1020310 with default exposure time (=60s?) would suggest

~283,4 ph/s or 20,00 mag