MOS CTI

\[ E_{\text{Photon}} \cdot CTE_{\text{sky\_fast}}^y(t) \cdot CTE_{\text{framestore\_fast}}^{600-y}(t) \cdot CTE_{\text{framestore\_slow}}^y(t) = E \]
how to derive the different CTEs?

\[
C T E_{sky \_ fast}(y, t) = \frac{E_{o2}(t)}{E_{o1}(t)}
\]

\[
C T E_{framestore \_ fast}(y, t) = \frac{E_{n2}(t)}{E_{n1}(t)}
\]

\[
C T E_{framestore \_ slow}(y, t) = \frac{E_{y+1}(t_0)}{E_{y}(t_0)}
\]

difficult or not possible to distinguish between the different CTEs
current situation

high energy radiation degrades CTE continuously

solar flares offset the CTE and change slope
possible future treatment -- 1

- degradation due to high energy particles is predictable

  could be modeled

- steps and changes of slope of CTI are not (yet) predictable – dependent on intensity of flare

  might be modeled in correlation with intensity and duration of flare
possible future treatment -- 2

• further investigation on different dependencies of CTE might lead to a physical model
• empirical model updated regularly after strong solar flares might be a pragmatic solution
• Questions:
  – Is there evidence for rate dependence of CTI?
  – Has this been measured on ground?
  – How will we distinguish between future CTI degradation and gain changes?