



17TH ADVANCED BEAM DYNAMICS WORKSHOP ON

FUTURE LIGHT SOURCES

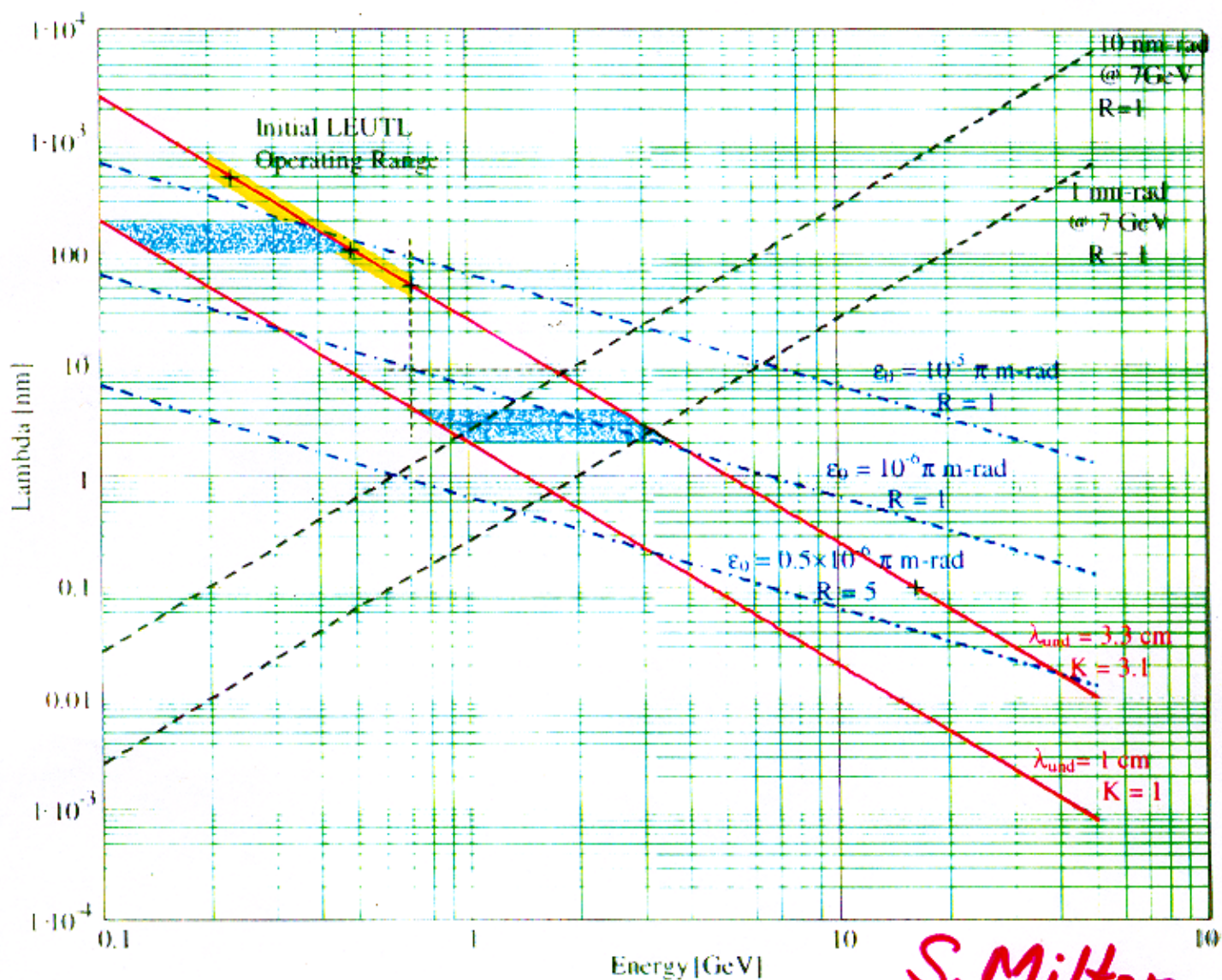
General Considerations

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Advanced Photon Source



S. Milton

Undulator Resonant Condition:

$$\lambda_L = \frac{\lambda_{und}}{2\gamma^2} \left(1 + \frac{K^2}{2} \right)$$

Diffraction Limit Requirement:

$$\lambda_L > \lambda_{diff} = \frac{4\pi\epsilon}{R}$$

Linac Emittance Scaling:

$$\epsilon = \frac{\epsilon_0}{\gamma}$$

Storage Ring Emittance Scaling:

$$\epsilon \propto \gamma^2$$

$$\gamma = \frac{E}{m_e c^2}$$

Undulator Saturation Length vs. Photon Wavelength and Beam Energy

