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Memo for Monday weekly ILC meeting

Results from IBS calculations done in BMAD

Below are the results of IBS rise time calculations done using various methods implemented in BMAD. The various methods include different forms and approximations of the Bjorken-Mtingwa and Piwinski derivations.

All calculations are performed on a 2.0 GeV 21 kg 12 wig CesrTF lattice (uncorrected north) optimized down to 1.81 nm horizontal emittance.

Definitions:

Method 1: Compute average beta and eta functions of lattice and plug into formula.

Method 2: Compute risetime for each element around the lattice and normalize.

Method	Equation	1/Ti		
		h	v	s
1	Piwinski w/o derivatives	0.0123	2.359	0.154
1	Piwinski w derivatives	0.0123	2.359	0.154
2	Piwinski w/o derivatives	52.8	0.493	3.41
2	Piwinski w derivatives	65.0	0.404	2.89
2	CIMP	41.3	0.958	2.46
2	CIMP w/o (log)	77.1	0.546	3.90
2	Bane	90.5	na	4.25