

Source Parameter Comparison

Parameter	CEBAF	JLab/FEL	EIC eRHIC	EIC MEIC	Cornell ERL	LHeC	CLIC	ILC
Polarization	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Photocathode	GaAs / GaAsP	Bulk GaAs			K ₂ CsSb			
Width of microbunch (ps)	50	35	100	50	2	100	100	1000
Time between microbunches (ns)	2	13	106	14.69	0.77	25	0.5002	337
Microbunch rep rate (MHz)	499	75	9.4	68.05	1300	40	1999	3
Number of microbunches	CW	CW	CW	220	CW	CW	312	3000
Width of macropulse	-	-	-	3.233 μs	-	-	156 ns	1 ms
Macropulse repetition rate (Hz)	-	-	-	2x83	-	-	50	5
Duty Factor	100%	100%	100%	5.4x10 ⁻⁴	100%	100%	7.8x10 ⁻⁶	5x10 ⁻³
Number electrons/microbunch	2.5x10 ⁶	8.3x10 ⁸	3.3x10 ¹⁰	1.6x10 ⁸	4.8x10 ⁸	4x10 ⁹	6x10 ⁹	3x10 ¹⁰
Charge per microbunch (pC)	0.4	133	5300	26	77	640	960	4800
Peak current of microbunch (A)	0.008	3.8	53	0.52	38.5	6.4	9.6	4.8
Laser Spot Size (cm, diameter)	0.1	0.5	0.6	0.3	0.3	0.5	1	1
Peak current density (A/cm ²)	1	19	188	7.4	500	32	12	6
Average current from gun (mA)	0.2	10	50	0.001	100	25	0.015	0.072

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