

Design of Microwave Undulator Cavity

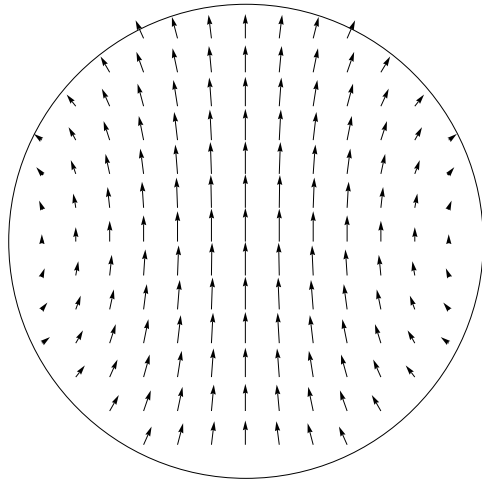
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Why microwave Undulator?

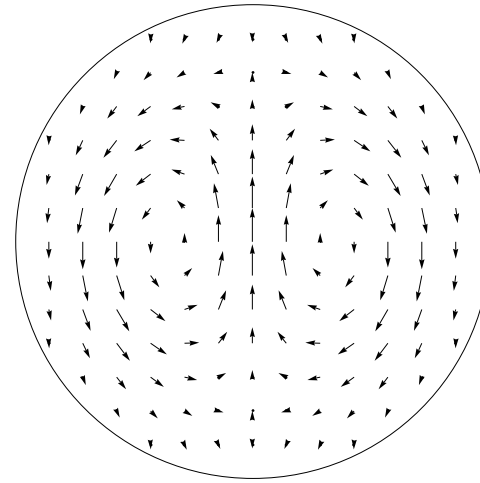
- Dynamic: Can change properties from pulse to pulse, for example flip polarization of helical undulator

Aim

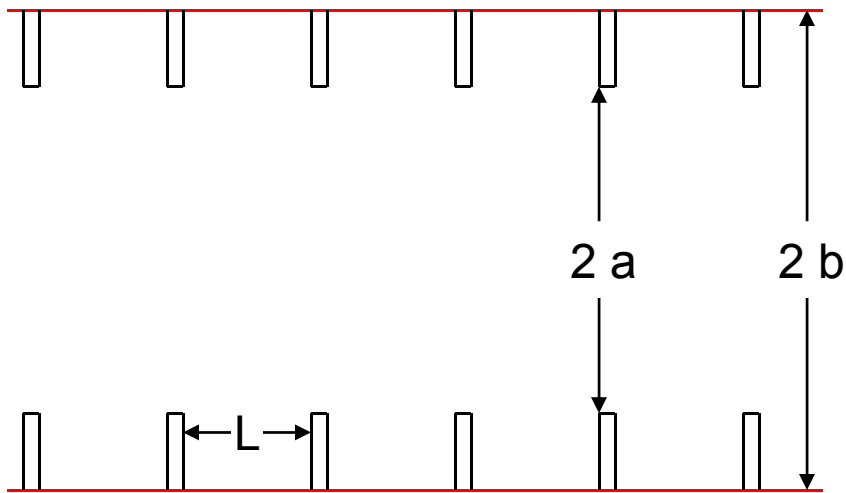
- To produce at least a tenth of the flux obtained by the BL13 static magnetic field Elliptical Polarized Undulator in the SPEAR ring



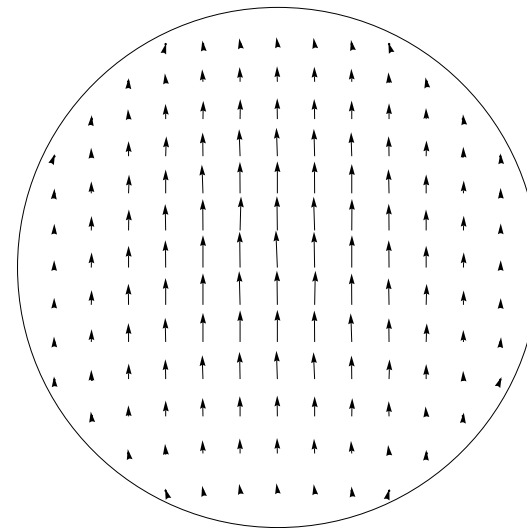
TE₁₁ - mode



TE₁₂ - mode



Corrugated Waveguide



Balanced hybrid HE₁₁ - mode

Superiority of HE_{11} - mode

	TE_{11}	TE_{12}	HE_{11}
Undulator parameter K	0.71	0.68	0.68
Power flow (GW)	5.8	180	79
RF power loss (MW/m)	5.1	1.6	0.326
RF frequency (GHz)	2.64	2.38	2.37
Cavity Radius (cm)	6.5	57.7	38

A mode matching code developed to design a corrugated waveguide cavity