

Comparison of the focal length of the solenoid

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Focal length

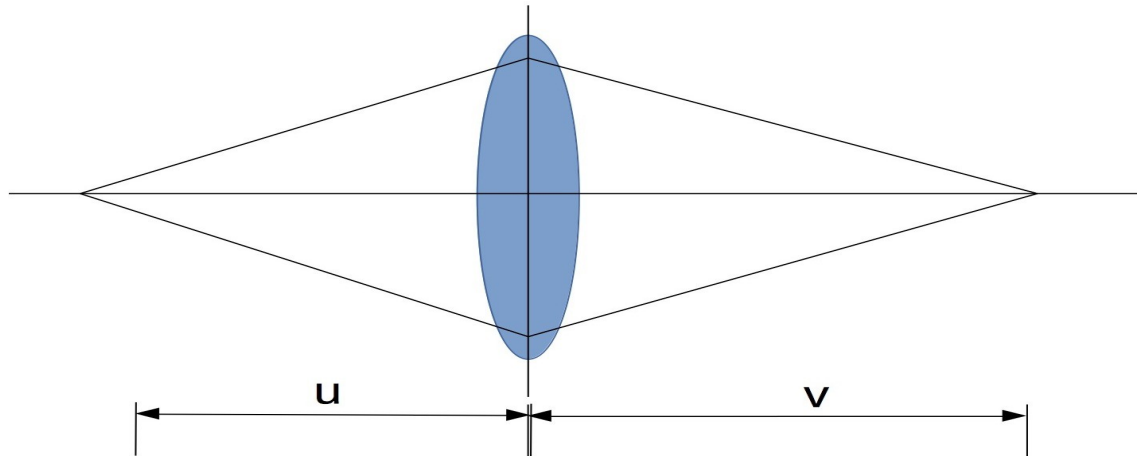
- For a solenoid

$$\frac{1}{f} = \frac{e^2 B_z^2 dz}{4\beta_z^2 \gamma^2 m^2 c^2}$$

- From optics, lens equations

$$\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$$

where, u-distance to the object, v-distance to the image



Current on each focus

Lens	Viewer	Current 03/23 (A)	Current 03/29 (A)
1	1	3.056	3.049
1	2	2.872	2.870
2	1	2.988	2.981
2	2	2.349	2.343

Calculated focal length values from lens equation and from current

Lens	Viewer	$f = \frac{uv}{u+v}$ (mm)	f from the current 03/23 (mm)	f from the current 03/29 (mm)
1	1	333.33	271.515	271.515
1	2	375.00	306.64	306.64
2	1	293.33	284.42	284.42
2	2	495.00	461.276	461.276

Without using the correction

Calculated focal length values from lens equation and from current

Lens	Viewer	$f = \frac{uv}{u+v}$ (mm)	f from the current 03/23 (mm)	f from the current 03/29 (mm)
1	1	437.56	271.515	271.515
1	2	556.19	306.64	306.64
2	1	310.00	284.42	284.42
2	2	560.22	461.276	461.276

With the correction

