Meson Production at 8 GeV for IDS120h

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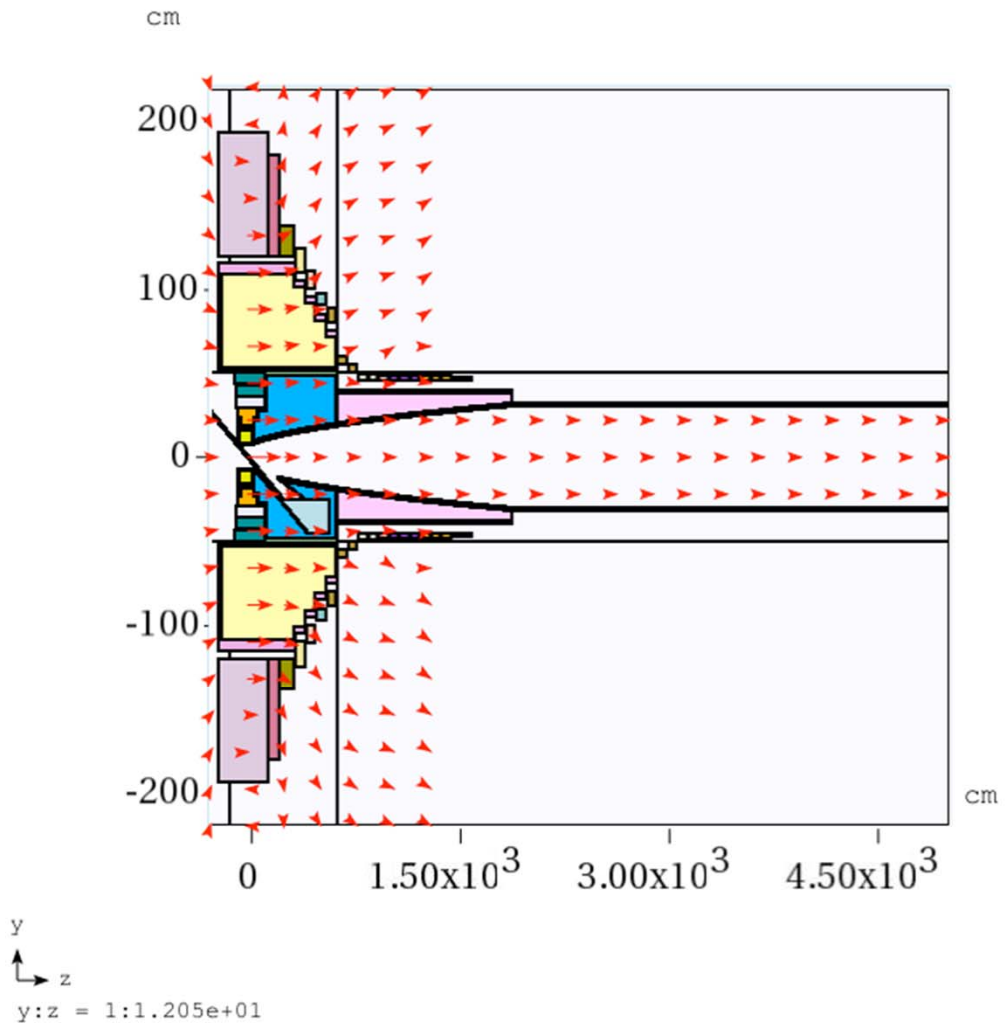
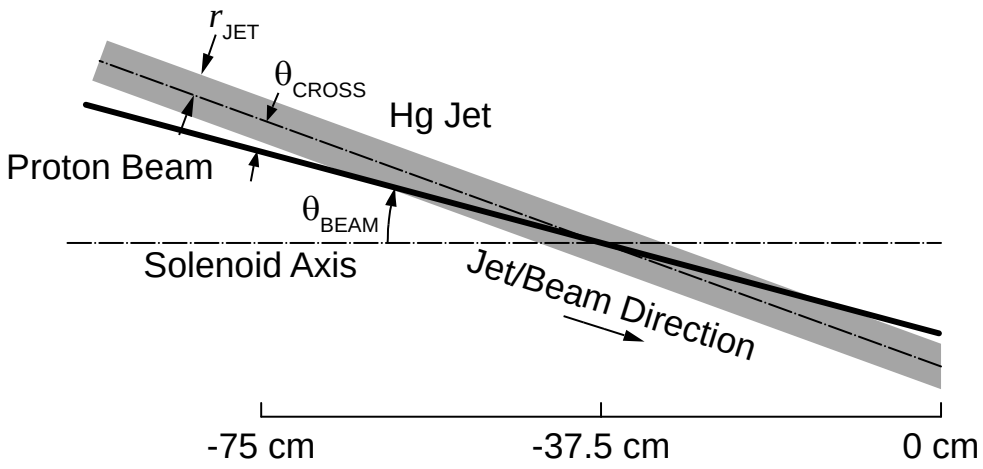
Configuration of IDS120h



Meson Production Study



The mercury jet target geometry. The proton beam and mercury jet cross at z=-37.5 cm.

1. IDS120h (Geometry and fieldmap)
2. Target (HG or GA)
3. Beam below the HG/GA jet exactly at z = -37.5 cm and project beam back to z = -200 cm.
4. Initial target parameters: target radius of 5 mm, beam angle of 67 mrad at z = -37.5 cm, beam/jet crossing angle of 33 mrad at z = -37.5 cm.

Optimized Target Parameters at z = -37.5 cm

	HG			GA		
	Beam radius, mm	Crossing angle, mrad	Beam angle, mrad	Beam radius, mm	Crossing angle, mrad	Beam angle, mrad
Initial	5	33	67	5	33	67
1st Cycle	4.6	23	120	6.7	21	112
2nd Cycle	4.15	23	117	5.5	17	93
3rd Cycle	4.15	21.6	120	4.9	12.2	92

Meson Productions at 8 GeV (400,000 events)

	HG	GA
Before optimization (Beam radius/beam angle/crossing angle	119794 (5mm/67mrad/33mrad)	97895 (5mm/67mrad/33mrad)
After optimization (Beam radius/beam angle/crossing angle)	129976 (4.15mm/120mrad/21.6mrad)	112269 (4.9mm/92mrad/12.2mrad)