



# Systematic Study for Sensitivity of Single GE1/1 Triple-GEM Chamber

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# Sensitivity Variations with Gas Mixture [ArCO<sub>2</sub>]



		Gas Percentage				*Baseline Configuration – ArCO <sub>2</sub> (70:30)	
Incident Particle	Neutron	ArCO <sub>2</sub> (60:40) (0°)	ArCO <sub>2</sub> (60:40) (45°)	ArCO <sub>2</sub> (80:20) (0°)	ArCO <sub>2</sub> (80:20) (45°)	Energy of Incident Particle	
		12.8398 % [+ve]	4.8423 % [+ve]	0.8692 % [-ve]	5.3125 % [-ve]		10 <sup>-9</sup> – 10 <sup>-2</sup> MeV
		37.3045 % [+ve]	10.658 % [+ve]	16.7795 % [-ve]	17.4543 % [-ve]		10 <sup>-2</sup> – 1 MeV
	Gamma	1.4841 % [+ve]	0.4321 % [-ve]	1.0746 % [+ve]	2.6262 % [-ve]		1 – 10 <sup>3</sup> MeV
		0.1468 % [+ve]	0.7863 % [-ve]	0.4853 % [+ve]	0.0022 % [-ve]		10 <sup>-2</sup> – 1 MeV
	Positron	0.0967 % [-ve]	0.1055 % [-ve]	0.0529 % [-ve]	0.1110 % [-ve]		1 - 10 <sup>3</sup> MeV
		0.9831 % [-ve]	0.0666 % [+ve]	0.1660 % [+ve]	0.5117 % [+ve]		10 <sup>-2</sup> – 1 MeV
	Electron	1.3427 % [+ve]	1.1484 % [+ve]	1.4177 % [-ve]	1.2532 % [-ve]		1 - 10 <sup>3</sup> MeV
		0.6227 % [-ve]	8.2591 % [-ve]	0.7614 % [+ve]	18.8661 % [+ve]		10 <sup>-2</sup> - 1 MeV
		1.3144 % [+ve]	1.33552 % [+ve]	1.1603 % [-ve]	1.0560 % [-ve]		1 - 10 <sup>3</sup> MeV

# Sensitivity Variations with Gas Mixture [ArCO<sub>2</sub>CF<sub>4</sub>]



		Gas Mixtures				Energy of Incident Particle
		ArCO <sub>2</sub> CF <sub>4</sub> (40:20:40) (0°)	ArCO <sub>2</sub> CF <sub>4</sub> (40:20:40) (45°)	ArCO <sub>2</sub> CF <sub>4</sub> (50:15:35) (0°)	ArCO <sub>2</sub> CF <sub>4</sub> (50:15:35) (45°)	
Incident Particle	Neutron	4.7759 % [+ve]	4.5431 % [+ve]	7.5818 % [-ve]	5.8548 % [-ve]	10 <sup>-9</sup> – 10 <sup>-2</sup> MeV
		3.2104 % [+ve]	12.4941 % [+ve]	13.7638 % [-ve]	4.6806 % [-ve]	10 <sup>-2</sup> – 1 MeV
		1.14464 % [+ve]	2.0282 % [+ve]	1.7153 % [+ve]	1.6217 % [-ve]	1 – 10 <sup>3</sup> MeV
	Gamma	0.1363 % [-ve]	0.2186 % [-ve]	1.4335 % [+ve]	0.0636 % [-ve]	10 <sup>-2</sup> – 1 MeV
		0.5587 % [+ve]	0.4557 % [+ve]	0.2314 % [-ve]	0.0457 % [-ve]	1 - 10 <sup>3</sup> MeV
	Positron	1.4806 % [+ve]	0.8319 % [+ve]	100.0000 % [-ve]	0.8084 % [+ve]	10 <sup>-2</sup> – 1 MeV
		0.3751 % [+ve]	0.5332 % [+ve]	58.0534 % [-ve]	3.0152 % [-ve]	1 - 10 <sup>3</sup> MeV
	Electron	6.6621 % [+ve]	21.3311 % [+ve]	8.1296 % [+ve]	0.938422 % [-ve]	10 <sup>-2</sup> - 1 MeV
		0.5192 % [+ve]	0.4619 % [+ve]	3.1270 % [-ve]	2.95649 % [-ve]	1 - 10 <sup>3</sup> MeV

*\*Baseline Configuration –  
ArCO<sub>2</sub>CF<sub>4</sub> (45:15:40)*