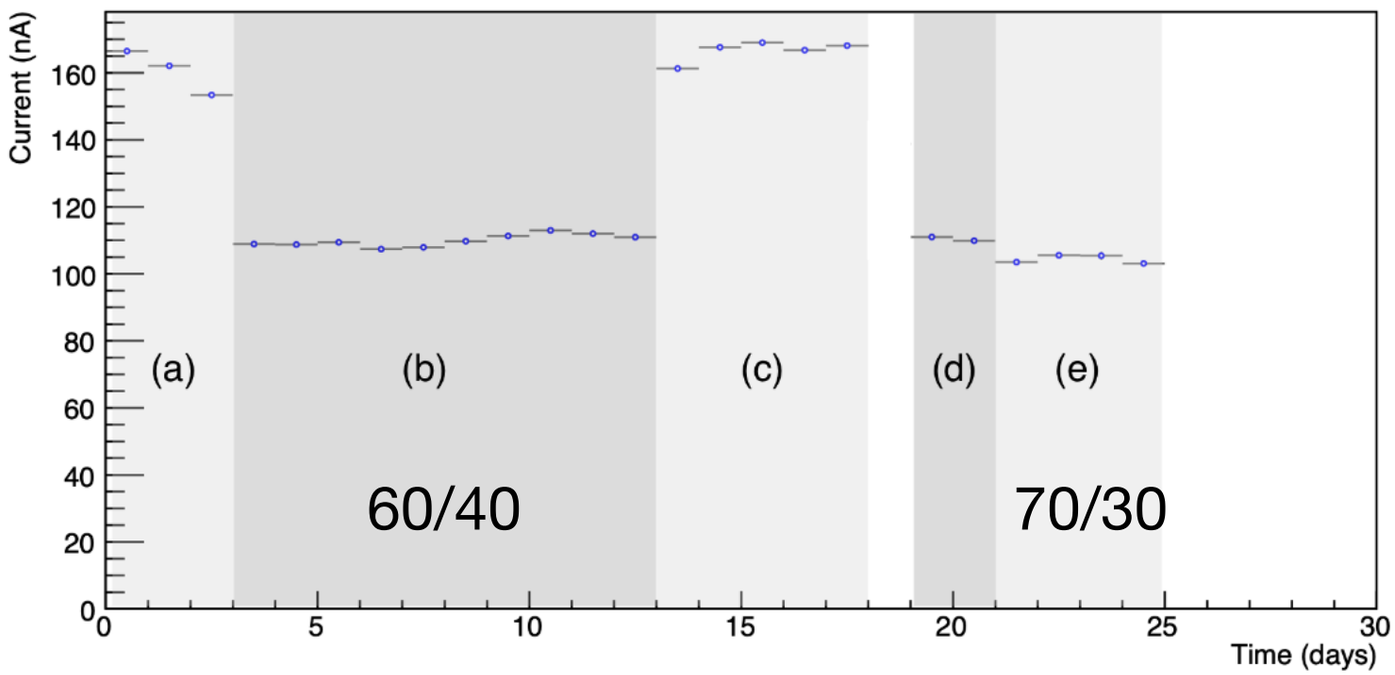
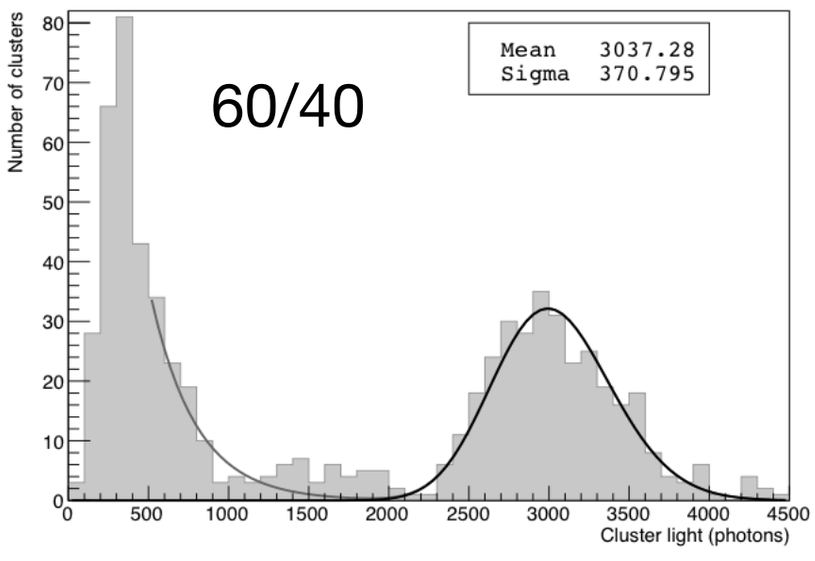
News

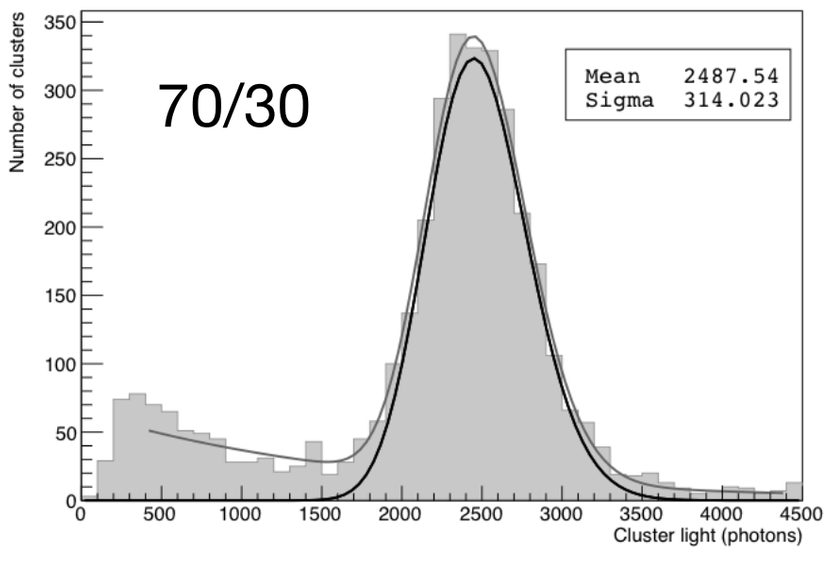
Paper on 70/30 vs 60/40

The idea is to compare performance of the two mixtures in the same gain configuration (b) and (e)

Period	Gas Proportion (He/CF_4)	Pb Shielding	^{55}Fe Source	Collimator	Avg. Current (nA)
(a)	60/40	No	No	No	164 ± 2
(b)	60/40	Yes	No	No	110 ± 1
(c)	60/40	Yes	Yes	No	168 ± 2
(d)	60/40	Yes	Yes	Yes	110 ± 1
(e)	70/30	Yes	Yes	Yes	104 ± 2







18% lower light yield for 70/30 and similar energy resolution

514 ± 63 detected photons per keV 420 ± 53 detected photons per keV

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18% lower light yield for 70/30 and similar energy resolution

The GEM scintillation in He–CF_4, Ar–CF_4, Ar–TEA and Xe–TEA mixtures

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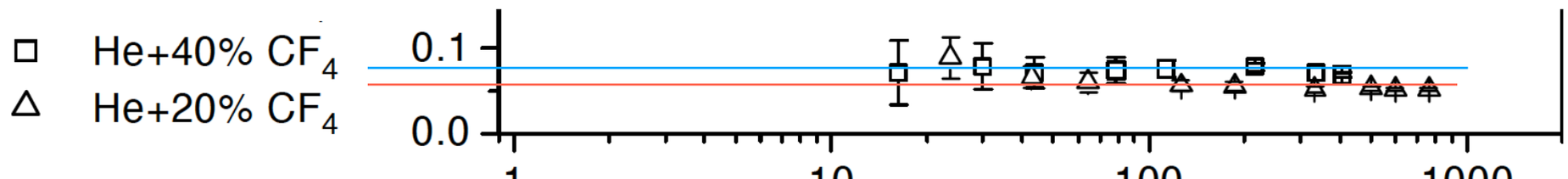

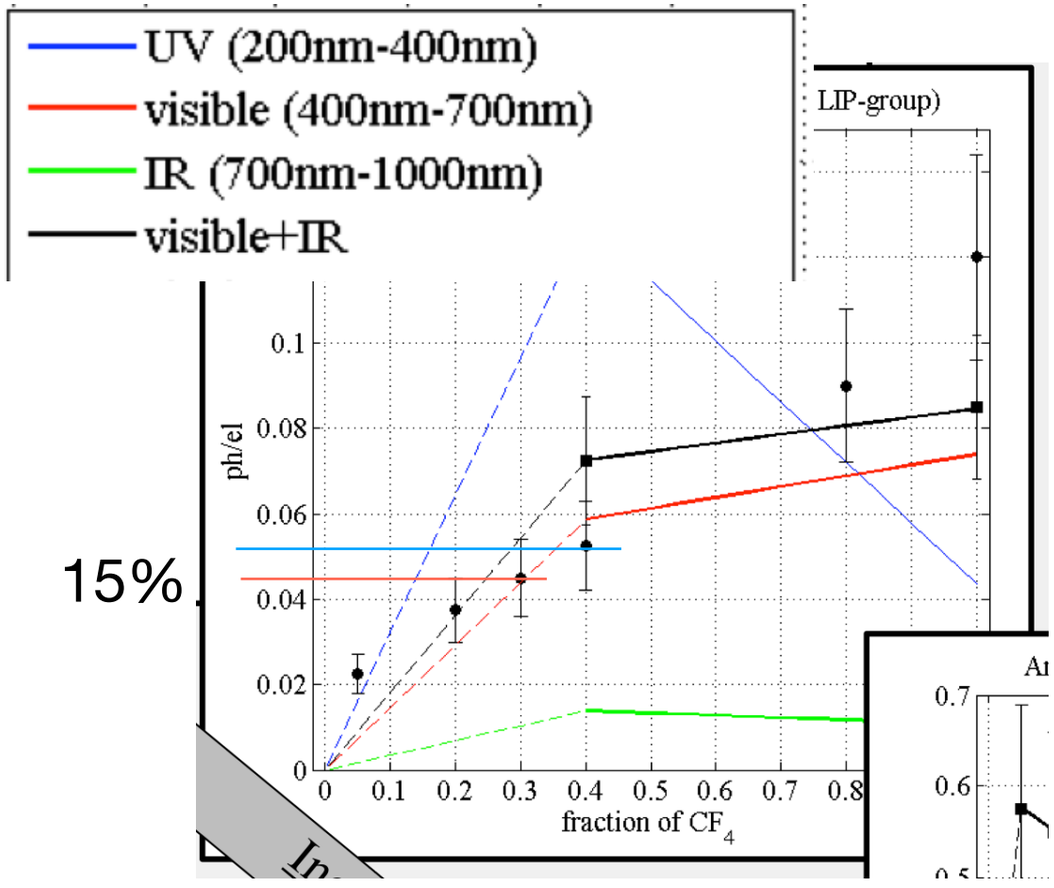

15%

Gain

VCI2016 - The 14th Vienna Conference on Instrumentation

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A survey on GEM-based readouts and gas mixtures for optical TPCs

We will survey the properties of optical gaseous TPCs, discussing the present sensitivity limits and prospects for calorimetry and tracking. Primary and secondary scintillation in both pure noble gases and mixtures will be discussed in detail, and a new set of systematic data for few relevant mixtures will be presented, taken with the help of a recently commissioned general-purpose optical TPC at the GDD group at CERN. Concerning the generation of secondary scintillation, particular emphasis will be placed on GEMs and micro-meshes, on the modelling of the scintillation process and on possible applications in fundamental and applied research.

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