



Marie Skłodowska-Curie  
Actions



# Machine Learning short-report

ESR:

Artem Golovatiuk

Supervisor:

Giovanni De Lellis

Co-supervisor:

Andrey Ustyuzhanin

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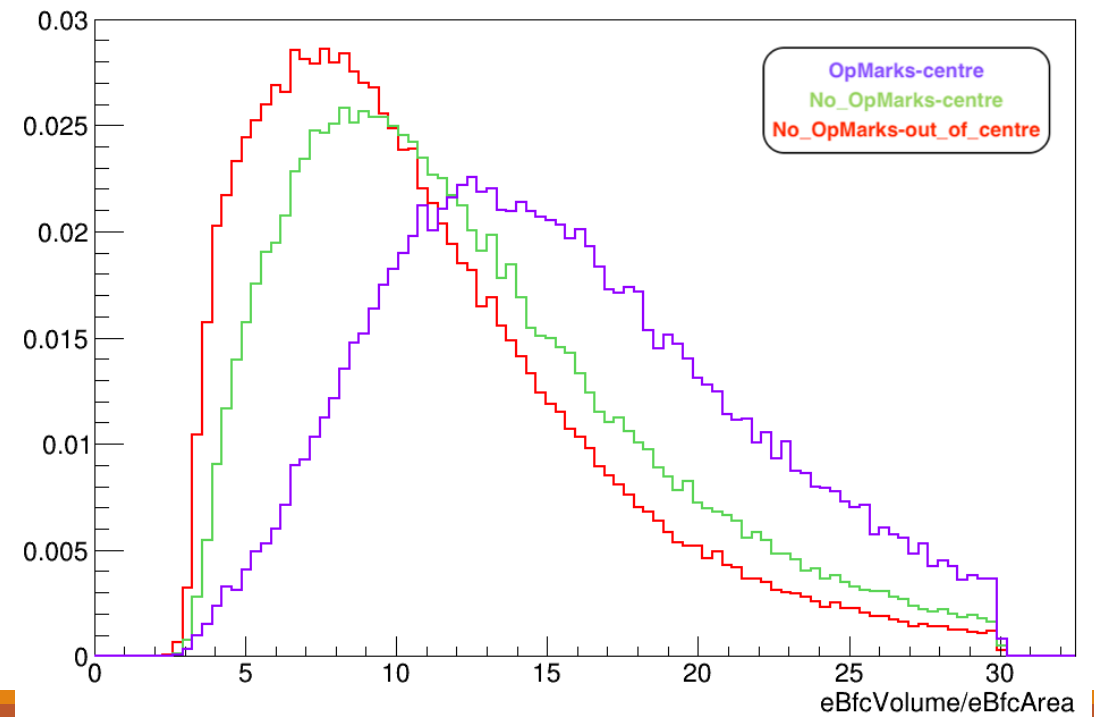
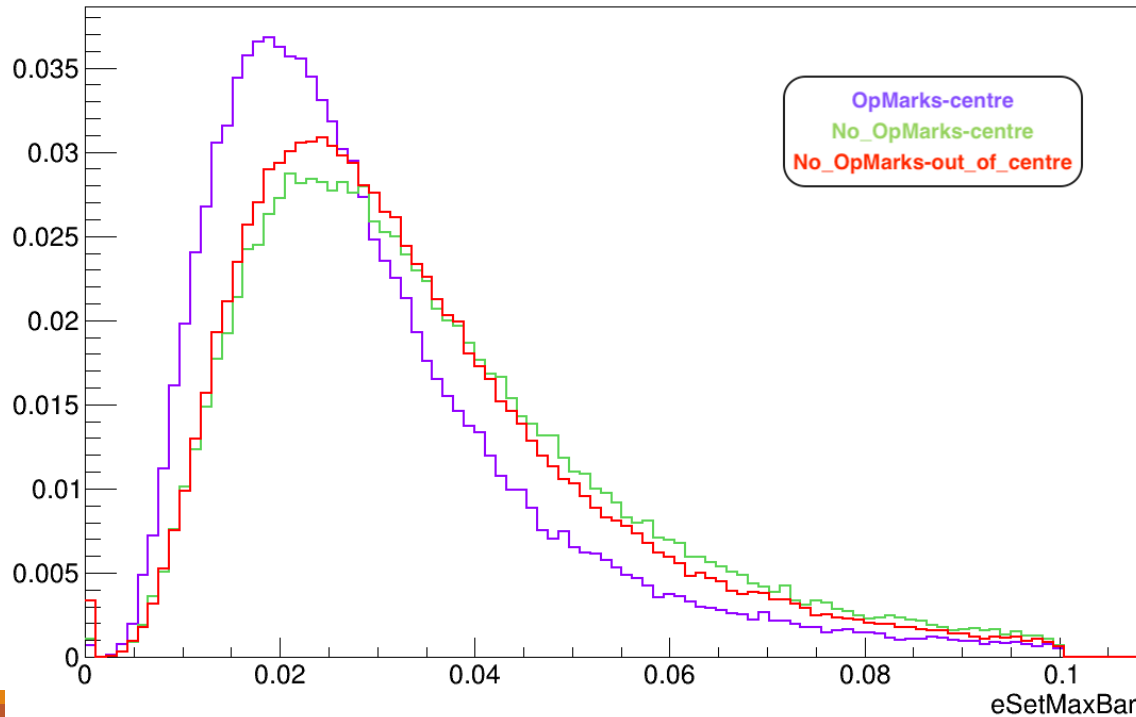
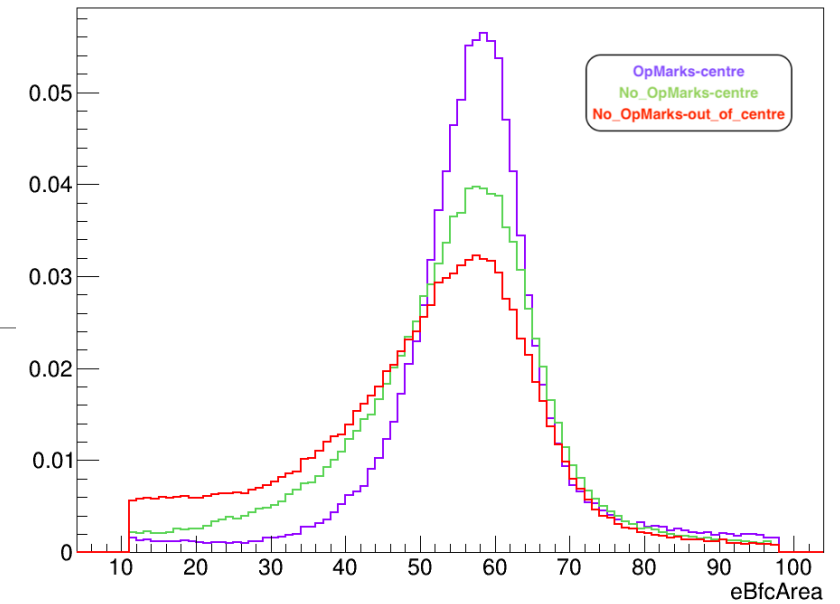
# Gamma centre cross-check

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- ▶ Re-scanned both gamma samples in the exact centre of the exposed region.
- ▶ Comparing physical features for opmarks vs no\_opmarks vs no\_opmarks\_out\_of\_centre
- ▶ Re-scans performed within 2 days, so all scanning parameters are the same

# Gamma centre

- opMark sample is twice as bright, but barshift is shorter
- no significant diff for centre vs out-of-centre

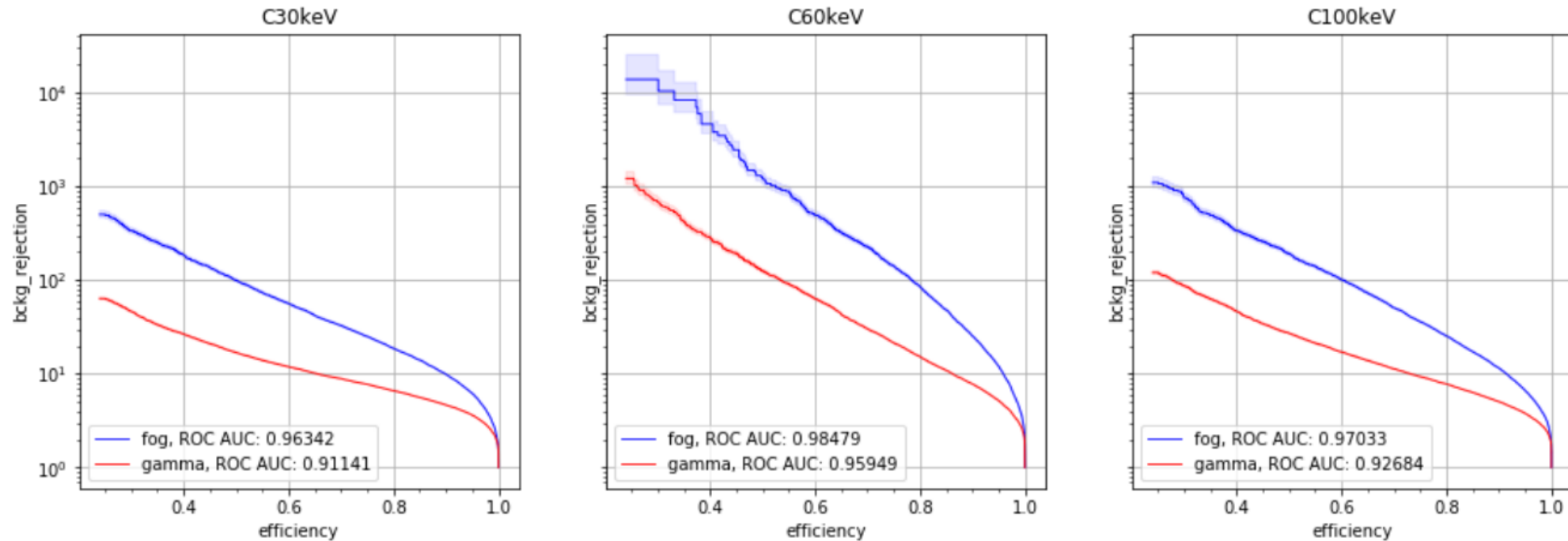


# Bayesian Search for ML hyperparams

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- ▶ Training of ML algorithm contains lots of hyper-parameters, that has to be selected before training and do not have any real physical interpretation corresponding to our problem.
- ▶ They can influence training and final result.
- ▶ Optimal set of parameters has to be found for each specific problem and dataset.
- ▶ Bayesian Search is an approach of finding optimal parameters more effectively, than just random search over parameter space.
- ▶ 10 parameters to optimise, ~4h to evaluate 1 point during search.
- ▶ Intermediate results are saved, so search can be interrupted and resumed later.
- ▶ Currently running 50 iterations of BayesSearch

# Preliminary results for ML (15 iter of BayesSearch)



- Model is trained **Carbon** (mix) vs **Fog** (only)
- Tested against Fog and against Gamma-no-opmarks