

COSI Work Packages @ Mainz



Universität Mainz	Ereignisrekonstruktion mit Maschinellem Lernen. GRB Lokalisierung (& Transienten). Hintergrundsimulationen.	Uwe Oberlack	AP3.1, AP3.2, AP3.3, AP2.1
Universität Würzburg	Entwicklung der Datenanalyseumgebung (COSIpy). Bildrekonstruktion. Hintergrundmodell.	Karl Mannheim, Thomas Siegert	AP1.1, AP1.2, AP2.2, AP2.3

Tabelle 1: Aufteilung der vorgeschlagenen Arbeitspakete (AP).

Work Package 3: Event reconstruction (with machine learning)

- WP 3.1: Compton sequence reconstruction → Jan missing
→ goal: improve low-level data analysis, improve efficiency, reduce background
- WP 3.2 Event classification → Jan significant progress in method, but not yet applied to COSI.
→ goal: improve signal/background ratio Jan's PhD thesis, Lommler & UO Exp. Ast. 2024
- WP 3.3 GRB localisation → tbd. Savitri? missing
→ goal: fast localisation (ideally online?) . other people working on this topic intensively
Should be applicable to other transient sources eventually → multi-messenger searches

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Work Package 2: Background modeling

(part of the same Implementation Topical Teams)

- WP 2.1: Background simulations (all types of particles) → Savitri
→ goal: optimize physical understanding of background,
attempt at sufficiently complete model
- Work closely with WP 2.2 (phenomenological models) for optimal background modeling
with smallest possible statistical and systematic uncertainties

much progress
verification w/ COSI
balloon flight
DC2 and DC3 bgd models
papers in progress
→ Savitri's talk

missing

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- WP 1.1 Software Framework COSIpy
 - ▶ Response modeling → [Pascal's talk](#)
 - ▶ Validation of methods
- Work on science topics (not covered by DLR proposal)
 - ▶ ^{26}Al from Vela region (B.Sc. thesis Pascal)
 - ▶ Dark matter modeling (B.Sc. thesis Santiago Bonadad, M.Sc. HaoYu Xie / Jack) → [Jack's talk](#)