

# A precision device needs precise simulation: Software description of the CBM Silicon Tracking System

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Precise modelling of detectors in simulations is the key to the understanding of their performance, which, in turn, is a prerequisite for the proper design choice and, later, for the achievement of valid physics results. In this report,

we describe the implementation of the Silicon Tracking System (STS), the main tracking device of the CBM experiment, in the CBM software environment. The STS makes use of double-sided silicon micro-strip sensors with double metal layers. We present a description of transport and detector response simulation, including all relevant physical effects like charge creation and drift, charge collection, cross-talk and digitization. Of particular importance and novelty is the description of the time behaviour of the detector, since its readout will not be externally triggered but continuous. We also cover some aspects of local reconstruction, which in the CBM case has to be performed in real-time and thus requires high-speed algorithms.

## Primary Keyword (Mandatory)

Simulation

## Secondary Keyword (Optional)

Data processing workflows and frameworks/pipelines

## Tertiary Keyword (Optional)

Algorithms

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