

# An AI Agent for Particle Physics Documentation

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We present a Retrieval-Augmented Generation (RAG) system designed to assist particle physics analysts by enabling efficient querying of information from a collection of technical documents. The system can process and extract relevant content from PDF files, provide accurate answers to user queries, and include direct reference links to the original sources. We demonstrate the capabilities of the tool using CMS analysis documentation and provide a user-friendly interface to facilitate interaction.

The workflow is experiment-agnostic and can be adapted for use in other collaborations. Importantly, it operates entirely on local infrastructure using self-hosted language models, ensuring that sensitive documents remain private and data is not transferred outside of approved servers. Preliminary use of the tool indicates a potential reduction of over 40% in the time analysts typically spend searching through documentation manually. We also discuss future development directions, including planned features to enhance functionality and usability in subsequent versions.

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