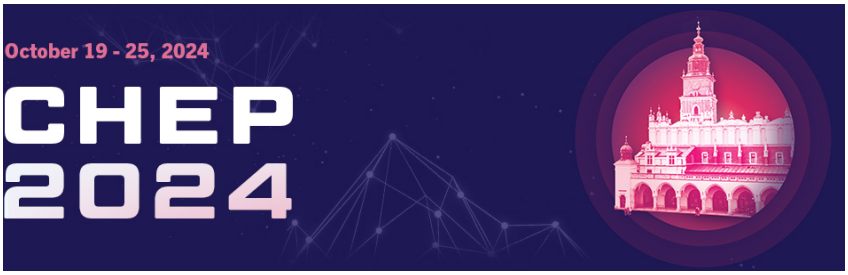

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Leveraging Language Models for Enhanced Code Review in Particle Physics Software Development

Collaborative software development for particle physics experiments demands rigorous code review processes to ensure maintainability, reliability, and efficiency. This work explores the integration of Large Language Models (LLMs) into the code review process, with a focus on utilizing both commercial and open models. We present a comprehensive code review workflow that incorporates LLMs, integrating various enhancements such as multi-agent capabilities and reflection. Furthermore, tools are employed to facilitate the verification of suggested code changes before presentation in the review. By harnessing the capabilities of LLMs, the review process can uncover faults and identify improvements that traditional automated analysis tools may overlook. This integration shows promise for improving code quality, reducing errors, and fostering collaboration among developers in the field of particle physics software development.

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