

CONDENSED MATTER SCIENCES SEMINAR

Dr Alexey Suslov

NHMFL Florida State University

Host and Speaker

Title

From overwhelmed to insightful: a use case of an AI-powered literature review

Friday, August 29th, 2025

1st Floor – B101

15:00-16:00

Abstract:

This work demonstrates a method for efficiently extracting specific technical details from scholarly sources, accomplished by developing an AI-powered literature analysis system. The application focused on obtaining the model numbers of transistors and operational amplifiers from a preselected collection of documents describing cryogenic amplifiers. The information was gathered from open-access documents available through the Florida State University library system and Zotero, a reference management tool.

The implementation of an automated system involved Vibe coding and utilizes Python, the OpenAI API, the Google Gemini API, and Excel worksheets. The system successfully identifies specific technical components in the provided Portable Document Format (PDF) files. It employs tailored prompting strategies and data verification methods, ensuring the reliable extraction of required information.

This approach has broad implications beyond the presented example, potentially transforming literature analysis across multiple fields by automating the extraction and organization of domain-specific technical information, significantly reducing the time and effort needed for large-scale literature reviews.

The resulting database of semiconducting devices used in cryogenic amplifiers will benefit scientists and electrical engineers who design and implement such amplifiers.