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gemcWeb: A Cloud Based Nuclear Physics Simulation Software[1]

SAM MARKELON, University of Connecticut — gemcWeb allows users to run nuclear physics simulations from the web. Being completely device agnostic, scientists can run simulations from anywhere with an Internet connection. Having a full user system, gemcWeb allows users to revisit and revise their projects, and share configurations and results with collaborators. gemcWeb is based on simulation software gemc, which is based on standard GEant4. gemcWeb requires no C++, gemc, or GEant4 knowledge. Using a simple but powerful GUI allows users to configure their project from geometries and configurations stored on the deployment server. Simulations are then run on the server, with results being posted to the user, and then securely stored. Python based and open-source, the main version of gemcWeb is hosted internally at Jefferson National Labratory and used by the CLAS12 and Electron-Ion Collider Project groups. However, as the software is open-source, and hosted as a GitHub repository, an instance can be deployed on the open web, or any institution's intra-net. An instance can be configured to host experiments specific to an institution, and the code base can be modified by any individual or group.

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