

## Feasibility studies using enhanced particle production: an afterburner for the MPD experiment

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Collective flow and global polarization are the key observables for characterizing properties of strongly-interacting matter in relativistic heavy-ion collisions at NICA energies. A significant challenge for the MPD experiment is achieving the necessary statistical precision for these measurements, particularly for direct photons,  $\phi$ -mesons, and  $\Sigma$ ,  $\Lambda$  hyperons. To address this, we have developed a statistical event re-sampling afterburner package. This tool was validated on simulated Xe+Xe collisions at  $\sqrt{s_{NN}} = 2.87$  GeV generated with the UrQMD model. The application of this afterburner significantly enhanced the resolution of the directed ( $v_1$ ) and elliptic ( $v_2$ ) flow of  $\Lambda$  hyperons, as well as their global polarization. This work confirms the method's utility for the future feasibility studies and data analysis in the MPD experiment.

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