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PQ inflation at the pole

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In this work we extend the Standard Model with a Peccei-Quinn (PQ) scalar, whose radial component drives inflation near the pole of its kinetic term, and identify the angular component with the axion field. During inflation, the PQ violating terms give a non-zero velocity to the axion, which evolves with an approximately conserved Noether PQ charge. We investigate the reheating dynamics and study the production of Dark Matter through the misalignment mechanism.

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