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Polarized proton operation at RHIC with partial snakes

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A series of power outages during setup for RHIC Run 23 damaged two of the four helical dipole modules that comprised one of the full Siberian Snakes in RHIC's Blue ring. The remaining two helical dipoles were reconfigured as a "partial" snake, one which rotates the spin by an angle less than 180 degrees. This partial snake configuration has a rotation angle and axis which both deviate from the ideal. We describe the compensatory measures taken to address the effects of these deviations. These include reconfiguring the other Blue snake to rematch the stable spin direction at injection and a change of the nominal store energy from 255 GeV to 254.2 GeV to improve the stable spin direction condition at store. Polarization transmission through RHIC acceleration was as good as with full snakes and we present some analytical and tracking results that corroborate the observed robustness with respect to deviations from ideal snakes.

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Footnotes

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Primary author: SCHOEFER, Vincent (Brookhaven National Laboratory)

Co-authors: HUANG, Haixin (Brookhaven National Laboratory); LIU, Chuyu (Brookhaven National Laboratory); MEOT, Francois (Brookhaven National Laboratory); PTITSYN, Vadim (Brookhaven National Laboratory); ROBERT-DEMOLAIZE, Guillaume (Brookhaven National Laboratory); RANJBAR, Vahid (Brookhaven National Laboratory); SHREY, Travis (Brookhaven National Laboratory)

Presenter: SCHOEFER, Vincent (Brookhaven National Laboratory)

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