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Neutral pion elliptic flow in p+Au, He+Au and p+Al collisions at 200 GeV

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In recent years, the PHENIX experiment has observed collectivity in small collision systems. This behavior resembles what is seen in large systems where quark-gluon plasma (QGP) is produced. However, whether QGP actually forms in small systems is still being debated. This work presents measurements of the neutral pion elliptic flow (v_2) coefficients as a function of p_T for different centrality classes in p+Au, $^3\text{He}+\text{Au}$, and p+Al collisions at 200 GeV using the event plane method. In central collisions (0-5%) for p_T from 1 to 3 GeV/c, the v_2 values in $^3\text{He}+\text{Au}$ exceed those in p+Au and p+Al. Moreover, in all three collision systems, v_2 values rise from central to peripheral collisions, with larger values observed in the 40-60% centrality class.

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