

# Identifying longitudinal rapidity fluctuations and directed flow measurements

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In heavy ion collisions, fluctuations of energy density in the initial state are essential both in transverse and in longitudinal direction. We present a method to estimate the Event-by-Event (EbE) center of mass rapidity fluctuations with the help of spectators (using ZDC detectors). This enables us to separate fluctuating and the global symmetry components in the flow, which is important for the odd flow harmonics, especially for  $v_1$  and  $v_3$ .

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