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Phase transition dynamics in hot nuclei and N/Z influence

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An abnormal production of events with almost equal-sized fragments was theoretically proposed as a signature of spinodal instabilities responsible for nuclear multifragmentation in the Fermi energy domain. On the other hand finite size effects are predicted to strongly reduce this extra production. High statistics quasifusion hot nuclei produced in central collisions between Xe and Sn isotopes at 32 and 45 MeV per nucleon incident energies have been used to definitively establish, through the experimental measurement of charge correlations, the presence of spinodal instabilities. N/Z influence was also studied. The nature of the dynamics of a phase transition i.e. the fragment formation was the last missing piece of the puzzle concerning the liquid-gas transition in nuclei.

Ref. B. Borderie et al., INDRA coll., Phys. Lett. B 782 (2018) 291.

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