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Bose Fireworks Trilogy ZHENDONG ZHANG, KAI-XUAN YAO, LEI FENG, University of Chicago, JIAZHONG HU, Tsinghua University, CHENG CHIN, University of Chicago, CHINLAB TEAM — Since the first observation of Bose Fireworks from atomic condensates with modulated interactions, many intriguing features have been identified. Our recent investigation on their phase coherence, temporal reversibility and the density wave order offer new insight into the origin and evolution of firework emission. We study the phase coherence by a two-stage modulation that emits and interferes two sets of fireworks. By a sudden quench of the modulation phase, we show that the firework emission can be partially reversed. Moreover, we find a density wave order that appears prior to the emission due to the interference of matterwaves with the condensate. From the above works, we present our latest picture of the firework dynamics in three chronological steps: density wave formation, near-field interference, and far-field thermal radiation.

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