

# Emergence of peaked singularities in the Euler-Poisson system

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We consider the one-dimensional Euler-Poisson system equipped with the Boltzmann relation. We provide the exact asymptotic behavior of the peaked solitary wave solutions near the peak. This enables us to study the cold ion limit of the peaked solitary waves with the sharp range of Holder exponents. Furthermore, we provide numerical evidence for  $C^1$  blow-up solutions to the pressureless Euler-Poisson system, whose blow-up profiles are asymptotically similar to its peaked solitary waves and exhibit a different form of blow-up compared to the Burgers-type (shock-like) blow-up. This is a joint work with Sang-Hyuck Moon (Pusan National University) and Kwan Woo (University of Basel).

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