The intricate relationship between the Mumford system and the Jacobians of singular hyperelliptic curves

Abstract:
The generalized Jacobian \( \text{Jac}_m(C') \) of a smooth hyperelliptic curve \( C' \) associated with a module \( m \) is an algebraic group that can be described by using lines bundle of the curve \( C' \) or by using a symmetric product of the curve \( C' \) provided with a law of composition. This second definition of the Jacobian \( \text{Jac}_m(C') \) is directly related to the fibres of a Mumford system. To be precise it is a subset of the compactified \( \text{Jac}_m(C') \) which is related to the fibres. This presentation will help us to demystify the relationship of these two mathematical objects.