

# MODULI OF PRIMITIVE MULTIPLE CURVES : FIRST STEPS

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The primitive curves are the multiple curves that can be locally embedded in smooth surfaces (we will always suppose that the associated reduced curves are smooth and projective). These curves have been defined and studied by C. Bănică and O. Forster in 1984. In 1995, D. Bayer and D. Eisenbud gave a complete description of the double curves. We give here a parametrization of primitive curves of arbitrary multiplicity. Let  $\mathbf{Z}_n = \text{spec}(\mathbb{C}[t]/(t^n))$ . The curves of multiplicity  $n$  are obtained by taking an open cover  $(U_i)$  of  $C$  and by glueing schemes of type  $U_i \times \mathbf{Z}_n$  using automorphisms of  $U_{ij} \times \mathbf{Z}_n$  that leave  $U_{ij}$  invariant. This leads to the study of the sheaf of nonabelian groups  $\mathcal{G}_n$  of automorphisms of  $C \times \mathbf{Z}_n$  that leave the reduced curve invariant, and to the study of its first cohomology group. We prove also that in most cases it is the same to extend a primitive curve  $C_n$  of multiplicity  $n$  to one of multiplicity  $n + 1$ , and to extend the quasi locally free sheaf  $\mathcal{D}_n$  of derivations of  $C_n$  to a rank 2 vector bundle on  $C_n$ .

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