

# Multivalued forms in $\mathbb{P}_{\mathbb{C}}^1$ and cohomology with local coefficients

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Let  $\mathbb{P}_{\mathbb{C}}^1$  be the complex projective line and let  $S$  be a set of  $N > 0$  points in  $\mathbb{P}_{\mathbb{C}}^1$ . Given  $\alpha_s, s \in S$  a family of complex numbers indexed by  $S$  satisfying the condition  $\prod \alpha_s = 1$ . This data defines a unique complex local system  $L$  with monodromies  $\alpha_s$  in  $\mathbb{P}_{\mathbb{C}}^1 \setminus S$ . The goal of this session is to understand when a multivalued differential form on  $\mathbb{P}_{\mathbb{C}}^1 \setminus S$  defines a non-zero cohomology class in  $H^1(\mathbb{P}_{\mathbb{C}}^1 \setminus S, L)$ . The main reference will be [1].

## References

- [1] P. Deligne and G. D. Mostow, *Monodromy of hypergeometric functions and nonlattice integral monodromy*, Inst. Hautes Etudes Sci. Publ. Math. **63** (1986), 5–89