

On flat bundles in characteristic 0 and $p > 0$

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Abstract

On a smooth quasi-projective complex variety X , the category of complex linear representations of the topological fundamental group, which is an abstract group of finite type, is tensor equivalent to the category of \mathcal{O}_X -coherent \mathcal{D}_X -modules with regular singularities (Deligne's Riemann-Hilbert correspondence). In characteristic $p > 0$, the latter, which is tensor equivalent to the category of infinitely Frobenius divisible vector bundles, is no longer controlled by a group of finite type. Yet some striking properties on the complex side are true on the characteristic $p > 0$ side. Most particularly, this category is controlled by Grothendieck's étale fundamental group.

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