A Connection of Fiberwise Projectivized Morphism with Meromorphic Space

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Abstract We prove arbitrary integral representation π of Gauss-Manin connection is 1-1 continuous between fibered $\overline{\mathcal{M}}_{g;n}$ and the Zariski open dense $\mathcal{M}_{g,n} \subset \overline{\mathcal{M}}_{g,n}$ of complete Hurwitz space $\overline{\mathcal{H}}_{g;k}$, and that for any extended connection which is marked-point continuous n-morphism ϕ-cone, with the dual ϕ* as morphism of graded algebras, $\left\{\phi : P^k \xrightarrow{\pi} \big(L^v\big)^{\otimes k} \;\middle|\; \mathcal{L} = \bigoplus_{i=1}^{n} \big(\mathcal{L}_i^V\big)^{\otimes k_i},\, \varphi_i : \mathcal{P}_i \mapsto \big(\mathcal{L}_i^V\big)^{\otimes k_i},\, \varphi : \mathcal{P} \mapsto \mathcal{L}\right\}$ converges bounded pointwise, where the map φ zero-locus $\mathcal{P}$-subcone $\mathcal{A} = \bigoplus_{i=1}^{n} \mathcal{A}_i$ is the quotient of the modulo $\bigoplus_{i=1}^{n} \mathbb{Z}/k_i\mathbb{Z}$ fiber $P\mathcal{A}$ projectivized bundle $\widetilde{\mathcal{A}}$, while φ_i is similar for modulo $\mathbb{Z}/k_i\mathbb{Z}$, and $k_1 \cdots k_n$ is multiplicity of φ along $\mathcal{A}$. We then prove equivalence for versal deformations of π with logarithmic residue resolution of poles $\overline{X} \mapsto (\mathbb{C}\mathbf{P}^1, \infty)/\overline{\mathcal{H}}_{g;k}$ along divisors and explicit derived category of coherent sheaves for each irreducible component of $\overline{X}$ with multiplicity $2g' - 2$ in entire morphism kernel $\mathcal{Z}_{g;k}$. We generalize π to $(\mathbb{C}\mathbf{P}^1, \infty)/\overline{\mathcal{H}}_{g;k}$, where $\overline{\mathcal{H}}_{g;k}$ acts by symplectomorphisms. And, because the Chern classes are not well defined for cones, we compute the Serge class for π through inverse product of coordinate-weights divided by order of group acting: $s(\mathcal{A}) = \prod_{i=1}^{n} \frac{1}{k_i} \frac{k_i^{k_i - 1}}{(k_i - 1)!}$; $s(\mathcal{A}_i) = \frac{1}{k_i} \frac{k_i^{k_i - 1}}{(k_i - 1)!}$; $s(\mathcal{P}) = \prod_{i=1}^{n} \frac{k_i!}{k_i^{k_i}} \frac{1}{1 - k_i\psi_i}$; $s(\mathcal{P}_i) = \frac{k_i!}{k_i^{k_i}} \frac{1}{1 - k_i\psi_i}$; $\psi_i = c_i\big(\mathcal{L}_i\big)$. With $0 \to \mathcal{A}_i \to \mathcal{P}_i \to \big(\mathcal{L}_i^V\big)^{\otimes k_i} \to 0$ and therefore $s\big(\mathcal{P}_i\big) = k_i\, s\big(\mathcal{A}_i\big)\, s\big(\big(\mathcal{L}_i^V\big)^{\otimes k}\big) = k_i \frac{s\big(\mathcal{A}_i\big)}{c\big(\big(\mathcal{L}_i^V\big)^{\otimes k}\big)}$ in s along subcone $\mathcal{A}_i$ with φ_i zero-multiplicity k_i, we prove the zero-class $s_0\big(\mathcal{A}_i\big)$ is the only non-trivial limit s, where each $\mathcal{A}_i$ is proven constant cone.

Keywords: Multi-logarithmic differential form, residue fiber current

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INTRODUCTION