Xu@Colloq: Boundedness of algebraic varieties

January-31-11
2:09 PM

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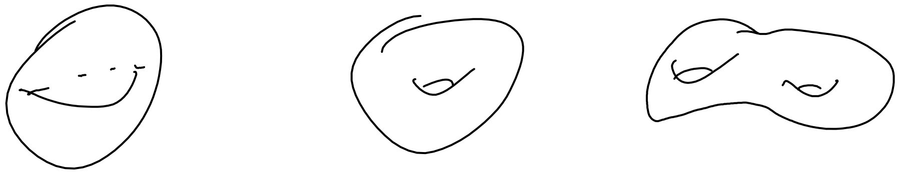
Compact Riemann Surfaces = Alg Curves / $\mathbb{C}$

$g=0$ $\qquad$ $g=1$ $\qquad$ $g\geq 2$



$e=\chi(T)=2>0$ $\qquad$ $=0$ $\qquad$ $2-2g<0$

curvature >0 $\qquad$ $=0$ $\qquad$ <0

Aut $\quad PGL_2(\mathbb{C})$ $\qquad$ $E \ltimes \mathbb{Z}/n$ $\qquad$ $<\infty$

Thm (Hurewitz) $g(C)\geq 2 \Rightarrow |Aut(C)| \leq 84(g-1)$

Pf $G \curvearrowright C \Rightarrow C/G = C_1$

$P_i \longrightarrow Q_i$ branch pts.

Locally $z_1 \longmapsto z^{d_i}$ $\qquad$ d_i: the branched index

$dz_1 \longrightarrow d_i z^{d_i-1} dz$ $\qquad$ 4:15

$\vdots$

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Diff Geometry: Given a hyperbolic compact n-manifold X, hope that

$$|Aut(X)| \leq C_n Vol(X)$$

Set $Y=[X/G]$. we hope $Vol(Y)\geq \epsilon_n$

Thm ($n\geq 4$, Wang) The volumes of n-dim orbifolds form a discrete set $\subset \mathbb{R}_{>0}$

Thm ($n=3$, ...Thurston...) The volumes form a DCC set := no infinite descending chains.

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