ATELIER « LA TOPOLOGIE DES VARIÉTÉS ALGÉBRIQUES »
21–28 SEPTEMBRE, 2012

WORKSHOP "THE TOPOLOGY OF ALGEBRAIC VARIETIE"
SEPTEMBER 21–28, 2012

Fundamental groups of algebraic surfaces with applications to holomorphic convexity

Bangere Purnaprajna *
purna@math.ku.edu

Fundamental groups of algebraic surfaces have attracted attention of geometers and topologists. I will talk about my new results with R. V. Gurjar relating the fundamental group of an algebraic surface X with a finite group of automorphisms G and the quotient X/G. As a by product we prove Shafarevich conjecture on holomorphic convexity for a large class of interesting algebraic surfaces that arise naturally in geometry. We also prove a conjecture on Nori on fundamental groups for these surfaces. These results also recover earlier results on fundamental groups of hyperelliptic fibrations. Considerable amount of effort is spent on mitigating the effects of singularities that naturally occur in the quotient. One of the key ingredients to carry this out for fibered surfaces over a curve is a surprising new result that we prove which bounds the multiplicities of the multiple fiber. This together with other maneuvers helps us towards a solution.

*Mathematics Department, The University of Kansas, 405 Snow Hall, Lawrence, KS 66045-2142, USA.