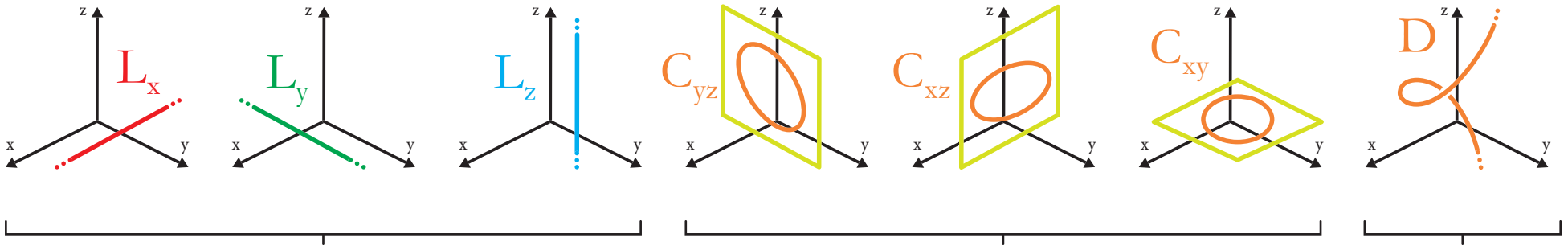
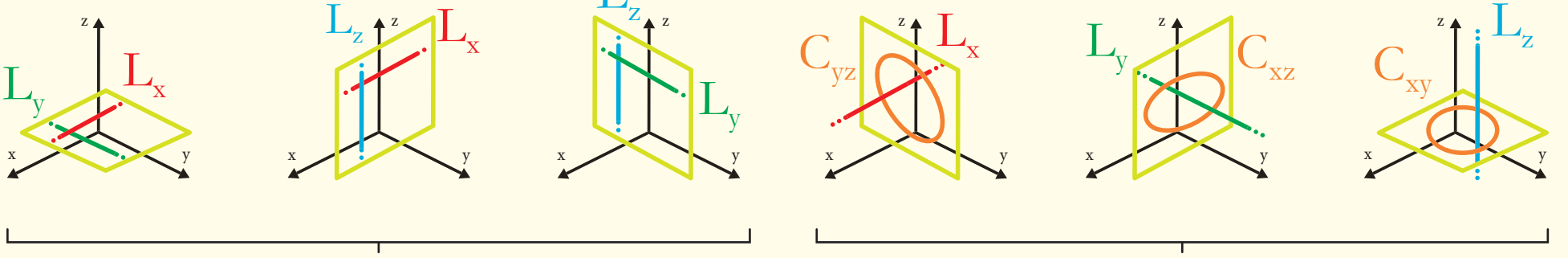
Hirotachi Abo, Irem Portakal and Luca Sodomaco

A VECTOR BUNDLE APPROACH TO NASH EQUILIBRIA

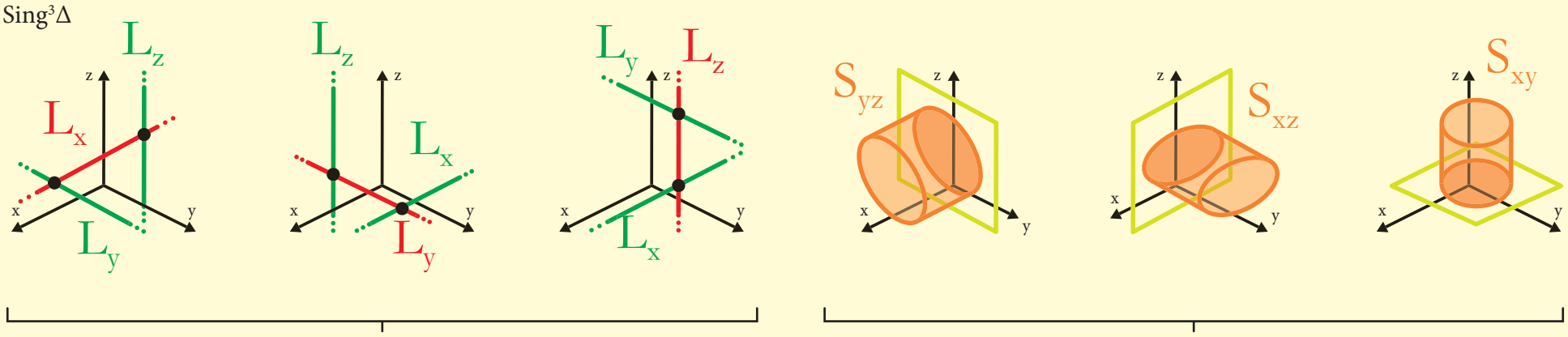
SingΔ



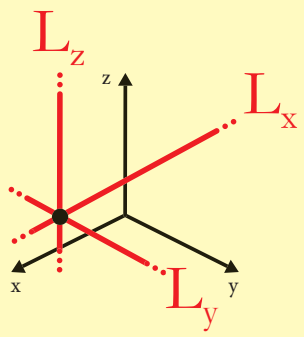
Sing$^2\Delta$



Sing$^3\Delta$

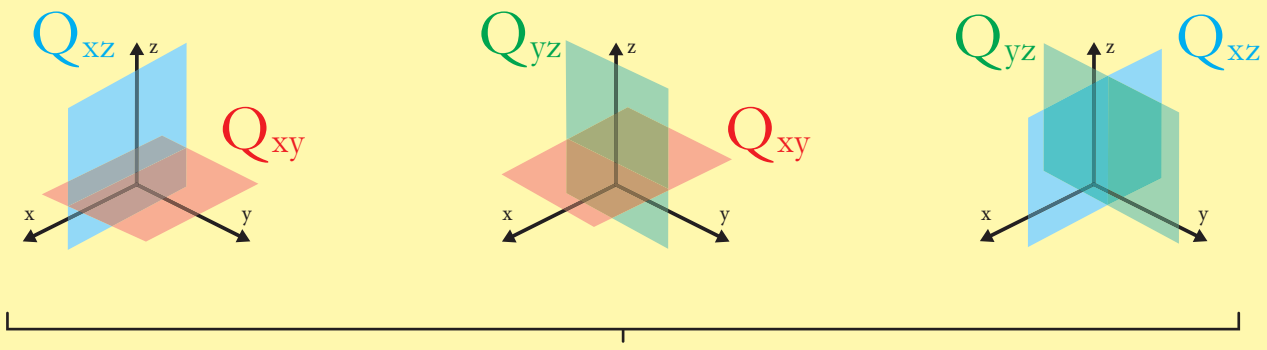


Sing$^4\Delta$



Space connected cubic, union of three concurrent lines

Sing$^5\Delta$



The Nash discriminant variety is defined as the algebraic variety of n-player games X in normal-form whose Nash equilibrium scheme $\mathcal{Z}_X$ is either nonreduced or has a positive dimensional component. In the case of three-player binary games, it is an irreducible hypersurface Δ of degree 6 in $\mathbb{P}^{11}$. An element of $\mathbb{P}^{11} \setminus \Delta$ corresponds to a (generic) game X such that $\mathcal{Z}_X$ consists of two distinct points. A nonsingular point of Δ corresponds to a game X such that $\mathcal{Z}_X$ is a point of multiplicity two. A singular point of Δ corresponds to a game X such that $\mathcal{Z}_X$ is either a line, a nonsingular conic, or a nonsingular twisted cubic. This is illustrated in the first row with seven irreducible components. The remaining rows describe all irreducible components of the singular strata of Δ.

MAX PLANCK INSTITUTE
FOR MATHEMATICS IN THE SCIENCES

read the paper on arxiv.org

check the code on mathrepo