Duals of algebraic geometry codes from Hirzebruch surfaces

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Résumé

Duals of AG (Algebraic Geometry) codes on algebraic curves are well-understood and can easily be expressed as AG codes on the same curves. However, next to nothing is known for duals of AG codes on an algebraic surface, only that they can be expressed as sums of AG codes on the same surface , but the proof is not constructive. As a consequence, only a few duals of AG codes on surfaces are known, and their minimum distances remain difficult to estimate.
The aim of this talk is to give an explicit form for the duals of AG codes from Hirzebruch surfaces. After a visual description of these surfaces and their rational points, I will describe their AG codes before presenting how we manage to compute their duals and even their dual minimum distances. This work hopes to pave the way toward the study of duals of AG codes from larger families of surfaces.

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