

## **Galois groups in 3D Reconstruction**

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In computer vision, the study of minimal problems is critical for many 3D reconstruction tasks. Solving minimal problems comes down to solving systems of polynomial equations of a very particular structure. "Structure" can be understood in terms of the Galois/monodromy group of an associated branched cover. For classical problems such as homography estimation and five-point relative pose, efficient solutions exploit imprimitivity of the Galois groups which; in these cases, the imprimitivity comes from certain rational deck transformations. In general, Galois groups can be computed with numerical homotopy continuation using a variety of software: tools relevant to this workshop are Bertini, HomotopyContinuation in Julia, and MonodromySolver in Macaulay2. I will highlight joint work with Viktor Korotynskiy, Tomas Pajdla, and Maggie Regan that studies an ever-expanding zoo of minimal problems and their Galois groups, with a view towards identifying new minimal problems that may be useful in practice.