

1163-14-476

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*Galois/monodromy groups in 3D reconstruction*. Preliminary report.

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” of minimal problems may be understood in terms of the Galois/monodromy group of an associated branched cover. We compute these groups for many examples using numerical homotopy continuation methods. Classical problems such as five-point relative pose, planar calibrated homography estimation, and perspective absolute pose give rise to imprimitive Galois groups, and solutions to these problems typically exploit a corresponding decomposition of the associated branched cover. Beside analyzing these cases, we find also several novel minimal problems whose Galois groups are imprimitive and may be reasonable to solve in practical applications. (Received September 07, 2020)