

Wave manifold: Topology meets PDE

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In the eighties, Dan Marchesin and PJ Paes Leme showed a weird picture to a group of topologists at PUC-Rio. This was the beginning of a road that led to the definition of wave manifold associated to a system of conservation laws, as a natural setting for rarefactions, Hugoniot curves and composites. For quadratic systems of two conservation laws, the wave manifold was constructed explicitly, stable topological configurations of rarefaction, Hugoniot and composite curves were obtained and local Riemann solutions were constructed. In order to construct non-local Riemann solutions, relevant surfaces were defined in the wave manifold, lax admissibility conditions were described and the wave manifold was divided in regions according to these conditions. We aim to give an overview of these results.

References

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