

Zermelo navigation with tacking

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The Zermelo navigation problem is concerned with finding a time-optimal path (of least traveltime) between two points on a manifold under the condition that the speed along the path is everywhere unit with respect to a given time- and position-dependent Finsler metric on the manifold. In this talk we will survey some of the results obtained in this classical setting and then discuss the more general problem of the finding optimal paths when we have two (or more) background Finsler metrics to choose from everywhere along the travel path. When shifting from one metric to another it is usually also needed to change direction. The ensuing zig-zag strategy for obtaining minimal traveltimes is well-known from yacht racing, where, indeed, the polar speed profile for any given sailboat is typically composed of two different time- and position-dependent Finsler metric indicatrices.

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References

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