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## RIEMANNIAN SUBMERSIONS AS PDE

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**Abstract:** The problem of determining the Riemannian submersions  $f : (Q, g) \rightarrow (M, h)$  with a given source Riemannian manifold  $(Q, g)$  will be discussed as a PDE problem. When the dimension of the target  $M$  is greater than 1, this is an overdetermined PDE system whose local nature is not well-understood. I will describe what is known and give some new results that classify such submersions when  $(Q, g)$  is a Riemannian space form of low dimension.