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*The homotopy type of the fibre of the  $p^{\text{th}}$  power map on loop spaces of spheres*

The problem of decomposing the fibre of the  $p^{\text{th}}$  power map on loop spaces of spheres into a product of indecomposable factors has a long history with relations to the homotopy exponents of spheres, Kervaire invariant one classes, the Kahn–Priddy theorem and classifying spaces for the fibre of the double suspension. In this talk I will discuss the remaining unresolved cases and outline a proof that, for odd primes  $p$ , the decomposition problem for  $\Omega S^{2n+1}\{p\}$  is equivalent to the  $p$ -primary Kervaire invariant problem.