

# On a class of mean field equations and their applications

GABRIELLA TARANTELLA

Department of Mathematics  
University of Rome “Tor Vergata”, Italy

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## Abstract

We shall discuss a class of mean field equations on compact surfaces (like the sphere or torus), which arise from the study of gauge field vortices. We present some existence and non-existence results as well as concentration properties of the solution, according to the topological and geometrical properties of the surface. Uniqueness will also be discussed in certain cases.