Equilibrium problems for vector potentials

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The study of vector equilibrium problems in logarithmic potential theory is an important tool in the investigation of many questions in approximation theory, e.g. like those involving multiple orthogonal polynomials, with numerous applications in numerical or applied mathematics. In this talk, we consider the problem of minimizing the logarithmic energy of vector potentials associated to a d-tuple of positive measures supported on closed subsets of the complex plane. Existence and uniqueness of a solution, and its characterization in terms of variational equations, are obtained under assumptions on the interaction matrix that are weaker than the usual ones. Moreover, we assume that the masses of the measures vary in a compact subset of $\mathbb{R}_+^d$.

We will also review a few examples taken from the recent literature that are related to our results.

References

[1] Bernhard Beckermann, Valery Kalyagin, Ana C. Matos and Franck Wielonsky, *Equilibrium problems for vector potentials with semidefinite interaction matrices and constrained masses*, Preprint (2011).