

Periodic solutions of the n-vortex problem on the sphere

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We study the periodic motion of vortices with equal circulations on the sphere. First, we discussed the existence of relative periodic solutions arising from the polygonal relative equilibrium. It is worth mentioning that one can find dense sets of choreographies along those families. In a work in progress, we extended the same result to the case of the relative equilibria bifurcating from the five platonic solids. Finally, we will briefly discuss the existence of periodic solutions arising from the platonic solids themselves. This problem has additional difficulties due to the fact that the system is $SO(3)$ -symmetric. We avoid such problems by reducing the system to a fixed-point space of spatio-temporal symmetries. This is joint work with J. Ize, R. Calleja, E. Doedel, L. García-Naranjo.