
On Some Equilibrium Problems

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After having in [1] studied the equilibrium position of one ball rolling on an elastic membrane we wanted to investigate the case of several balls. However, the problem is not so easy to handle and to get some insight we turned first to the case of several disks rolling on a wire (see [2], [3]). We considered the case of disks different in size and weight, but to illustrate the surprising situations that can occur let us just mention what happens when one considers two identical disks (in size and weight). A first guess is to believe that these two disks will reach their equilibrium when they are sitting at the same level in the middle of the wire. This is indeed true for light disks. But when the weight of the disks increases they adopt a position slightly tilted and two symmetric equilibria can be reached that way. Thus, the increase in the tension of the wire rendered the equilibrium unstable. Some other surprising behaviours will be explained and several open problems will be pointed out.

References

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- [3]. M. Chipot. In preparation.