Ont he tidal function between two real bodies

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The general connection of the tidal function between two small bodies of arbitrary substance distribution has been derived. The case has been regarded when distances between the bodies are comparable to their sizes. In the above cases, the effect of the body figure is substantial.

The relations obtained are utilized for the tidal influence of Jupiter on the surface of Io. It has been shown that Jupiter's shape (with $J_2 = 0.015$) causes in the sub-Jupiter point a deformation of about 15m. This is approximately 10% of the total tidal deformation of Io caused by Jupiter's gravitation.