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On the Impact Law in Elastic Plate-Like Bodies

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We study the problem of normal impact of a rigid sphere on a circular elastic plate whose thickness is not so small with respect to its diameter, so the Kirchhoff's theory cannot be applied. For plate-like bodies of this kind it is convenient to apply a theory proposed by Levinson (1985). To describe mathematically the pressure distribution and the extent of the contact area we adopt the Hertz's theory. The solution of the equations of the three dimensional theory of the elastodynamic is obtained by using a semi-inverse method and a solving technique based on the method of the separation of variables By combining these theories we derive an impact law in elastic plate-like bodies.

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