

- 4013 Goldsmith W and Cunningham D M  
KINEMATIC PHENOMENA OBSERVED DURING THE OBLIQUE  
IMPACT OF A SPHERE ON A BEAM  
Journal of Applied Mechanics, Trans. ASME  
1956, Vol. 78, pp. 612-616.

Experimental data relating to the kinetics of oblique impact of a 1/2-inch-diameter steel sphere upon steel beams at initial velocities ranging from 30 to 150 fps are presented. The variation of beam deflection, contact duration, trajectory of the sphere, and contour topography with angle of incidence, beam size, and initial velocity have been determined and the velocity of propagation of several waves has been ascertained.

- 4014 Symonds P S  
DYNAMIC LOAD CHARACTERISTICS IN PLASTIC BENDING OF  
BEAMS  
Journal of Applied Mechanics, Trans. ASME  
1953, Vol. 75, p. 475.

- 4015 Eringen A C  
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- 4016 Wang A J  
PERMANENT DEFLECTION OF A PLASTIC PLATE UNDER  
BLAST LOADING  
Journal of Applied Mechanics, Trans. ASME  
1955, Vol. 77, p. 375.

- 4017 Conroy M F  
PLASTIC DEFORMATION OF SEMI-INFINITE BEAMS UNDER  
TRANSVERSE IMPACT LOADING AT THE FREE END  
Journal of Applied Mechanics, Trans. ASME  
1956, Vol. 78, pp. 239-243.

The object of this paper is to consider the plastic deformation of the semi-infinite beams subject to dynamic transverse loading at the free end. The type of loading considered is that of a constant bending moment, together with a transverse force the magnitude of which is inversely proportional to the square root of time. Part 1 of the paper consists of a plastic-rigid analysis of the problem, based on the plastic-rigid analysis of infinite beams under transverse, constant velocity, impact loading developed by the author. Part 2 of the paper consists of an elastic-plastic solution of the problem, based on a theoretical analysis of the plastic deformation of infinite beams subject to transverse, constant-velocity impact loading developed by H. F. Bohenblust. Specific problems are considered for which the deflection solutions obtained by elastic ideally plastic and rigid ideally plastic analyses are compared. (Author's abstract)

- 4018        Salvadori M G and Weidlinger P  
ON THE DYNAMIC STRENGTH OF RIGID-PLASTIC BEAMS UNDER  
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Proceedings American Society of Civil Engineers, Journal of  
Engineering Mechanics Paper 1389, October 1957.
- 4019        Solodovnikov R V  
TRANSVERSE IMPACT ON AN INFINITE STRETCHED BAR  
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1955, pp. 263-268.
- 4020        Ruhl K and Pagel H J  
RECENT INVESTIGATIONS OF THE STRAIN PRODUCED IN BEAMS  
BY LATERAL IMPACT LOADING (German)  
Forschungsarbeiten auf dem Gebiet des Ingenieurwesens, Berlin  
1956, Vol. 22, pp. 202-209.
- 4021        Seiler J A, Cotler B A and Symonds P S  
IMPULSIVE LOADING ON ELASTIC-PLASTIC BEAMS  
Journal of Applied Mechanics, Trans. ASME  
1956, Vol. 78, pp. 515-521.
- A simply supported uniform beam of ductile material,  
subjected to impulsive loading such that the initial  
velocity is a half-sine wave, is considered in this paper.  
The elastic and elastic-plastic motions are discussed  
under the assumption that plastic flow is confined to one  
cross section, and the final deformations are compared  
with those computed from an analysis which neglects all  
elastic deformations. The purpose of the work is to pro-  
vide further information which may help in estimating the  
range of validity of the latter ("rigid-plastic") type of  
analysis. (Authors' abstract)
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RESPONSE OF AN ELASTIC DISK TO IMPACT AND MOVING LOADS  
Quarterly Journal of Mechanics and Applied Mathematics  
1955, Vol. 8, pp. 385-393.
- 4023        Symonds P S and Leth C F A  
IMPACT OF FINITE BEAMS OF DUCTILE MATERIAL  
Journal of Mechanics and Physics of Solids  
1954, Vol. 2, pp. 92-102.
- 4024        Lamb G L  
THE TRANSMISSION OF A SPHERICAL SOUND WAVE THROUGH A  
THIN ELASTIC PLATE  
Annals of Physics  
1957, Vol. 1, pp. 233-246.