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衝突破壊における破片形状分布が示す破壊過程
Fracture process inferred from fragment shape in impact disruption

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The results of the previous impact experiments show that the shape of the fragments, characterized by the triaxial dimensions a, b, and c, (a ? b ? c), behaves in a very regular way (e.g., Fujiwara et al. 1989). In widely different experimental conditions, the axial ratios, b/a and c/a, have distributions peaked at about each mean value, ˜0.7 and ˜0.5, respectively, and flattened (i.e., small c/a) fragments are almost absence.

We find that, if the distribution of the shape parameters, (b/a, c/a), is homogeneous, and there is no fragment at c?? <k, where k is a constant (0 <k <1; in Fujiwara et al. (1978) k was ˜0.2), the averages of the shape parameters, (0.7, 0.5) can be realized. Then, we discuss the fracture processes to represent the homogeneous distribution in the shape parameters. The expected dominant fracture process in impact fragmentation is reported.

Fujiwara, A., et al., Nature 272, 602-603, 1978.
Fujiwara, A., et al., in Asteroids II, pp. 240-265, 1989.

キーワード: 衝突, 破壊, 破片, 形状, 破壊過程
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