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Towards a collision model for protoplanetary dust aggregates

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Based on recent laboratory experiments on collisions between high-porosity dust aggregates, conditions for sticking, rebound and fragmentation in protoplanetary-dust collisions can be formulated. I will review some of the laboratory and microgravity impact experiments, characterize protoplanetary dust aggregates by macroscopic properties, such as volume filling factor, compressive strength, plasticity, and tensile strength, and derive conditions under which a colliding pair of dust aggregates will stick, bounce or fragment. These conditions can then be used in numerical calculations of the evolution of solid matter in protoplanetary discs.