

# Chapter 29

## The System

**Abstract** The system is a deformable solid and a fixed obstacle.

The system is the solid and an obstacle. At initial time, the solid occupies domain  $\mathcal{D}_a$  and its boundary  $\partial\mathcal{D}_a$ , and at time  $t$  the solid occupies domain  $\mathcal{D}_x$  and its boundary  $\partial\mathcal{D}_x$ . A domain is a smooth, bounded, connected open set of  $\mathbb{R}^3$ . The solid is fixed to the obstacle which occupies domain  $\mathcal{D}_{obs}$  and its boundary  $\partial\mathcal{D}_{obs}$ , on part  $\Gamma_a^0 \subset \partial\mathcal{D}_{obs} \cap \partial\mathcal{D}_a$  of their boundaries. When moving, it can be in unilateral contact with the obstacle outside part  $\Gamma_a^0$ , Fig. 30.1.

As usual, we consider the obstacle is part of the system which occupies domain  $\mathcal{D}_a \cup \mathcal{D}_{obs}$  and its boundary. For the sake of simplicity, we assume the obstacle is immobile. This is the case if it is very massive compared to the solid.