

# New research opportunities for roadside safety barriers improvement

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**Abstract.** Among the major topics regarding the protection of roads, restraint systems still represent a big opportunity in order to increase safety performances. When accidents happen, in fact, the infrastructure can substantially contribute to the reduction of consequences if its marginal spaces are well designed and/or effective restraint systems are installed there. Nevertheless, basic concepts and technology of road safety barriers have not significantly changed for the last two decades. The paper proposes a new approach to the study aimed to define possible enhancements of restraint safety systems performances, by using new materials and defining innovative design principles. In particular, roadside systems can be developed with regard to vehicle-barrier interaction, vehicle-oriented design (included low-mass and extremely low-mass vehicles), traffic suitability, user protection, working width reduction. In addition, thanks to sensors embedded into the barriers, it is also expected to deal with new challenges related to the guidance of automatic vehicles and I2V communication.