# Impact behavior of lattice structures produced by selective laser melting

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The fast development of additive manufacturing technologies allows the optimization of lattice structures in particular, in the present study, for impact energy absorption. Since their properties depend on parameters such as build material or core morphology, the project compares different combinations: strut geometry (in particular its diameter and roughness reduced trough chemical etching), materials (AlSi10Mg or Ti-6Al-4V), processed by two metal additive manufacturing techniques (SLM or EBM), covered or not by Al2024 plates and with or without post-treatment. The deformation mechanisms after compression and impact tests are characterized in particular by 3D X-ray tomography. The structures may thus be optimized in order to delay failure. In addition, a simplified model based on beam theory allows to understand the static and dynamic behaviors of the structure.