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In-plane shear response of FRCM-strengthened masonry walls

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Within the framework of seismic risk mitigation of existing masonry structures, the beneficial feasibility of the strengthening system is a key topic. In the last decades, the use of fiber-reinforced composites as retrofitting technique has gained the attention of the scientific community. In particular, the advantage to use FRCMs (Fiber Reinforced Cementitious Matrix), due to the ease of application, for the strengthening of the masonry walls results in an increase of the in-plane shear capacity [1]. This retrofit method consists in applying a textile grid embedded in a mortar thickness spread onto the wall surfaces. Several experimental campaigns have been carried out in order to assess the effective shear response enhancement of the retrofitted masonry walls, in terms of both strength and ductility. Moreover, analytical theoretical and design formulations for evaluating the in-plane shear capacity of strengthened walls have been proposed [2, 3]. Nevertheless, the variability of the experimental data and results depending on different test set-ups and different specimen typology appears rather large. With the final goal to assess the influence of the FRCM-masonry mechanical and geometrical properties on the in-plane shear capacity of retrofitted walls and to evaluate the reliability of the existing forecast formulations, a large database of experimental tests on FRCM-masonry systems is collected and critically presented.

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