

<b>Patent Title:</b>	<b>Laser fusion system and method</b>
<b>FBK Center:</b>	CMM
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<b>Application(s):</b>	Generation of energy and of electricity
<b>Keyword(s):</b>	Nuclear fusion reaction, Laser beam of high intensity
<b>Abstract:</b>	The invention describes a system, a method and a target for producing nuclear fusion reactions. A laser is used to irradiate a single temporally shaped laser pulse comprising a pre-pulse and a main pulse or at least two consecutive laser pulses onto the target. A first of the plurality of consecutive laser pulses or a prepulse of the single laser pulse is used to generate a first plasma in front of the target. The system is configured such that this first plasma is capable to focus the second laser pulse or main laser pulse onto the target, i.e. to reduce the focal spot size compared to the first or pre-pulse. The plasma initiates a so-called selffocusing of the second or main laser pulse onto the target. The focused second or main laser pulse can then be used to accelerate first particles such that these accelerated first particles produce nuclear fusion reactions with second particles contained in the target.

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