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Macroscopic thermal finite element modelling of additive metal manufacturing by selective laser melting process

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A general strategy is developed for modelling selective laser melting process with parts of complex geometry:

- The deposition of energy and matter are implemented by layer or by fraction of layer, not following continuously and explicitly the laser scan path in time and space.
- The numerical heat transfer modelling is considered through the consolidated piece as well as non-melted powder bed.
- The procedures are implemented with mesh metric calculation and time step adaptation

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