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Geometry Control of Closed Contour Forming in Uniform Micro Metal Droplet Deposition Manufacturing

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Abstract:

Micro metal droplet deposition manufacturing shows great potential applications in many industrial areas such as micro circuits printing, thin-wall metal parts, porous metal parts, and heterogeneous material parts. However, excessive overlapping of metal droplets in corners deteriorates the quality of printed parts. To solve this problem, the droplet center-to-center distance must always keep uniform and be in an ideal range. First, reasons of excessive overlapping in corners are analyzed and a mathematical model is proposed. Then droplet center-to-center distance is optimized and compensated according to corner angle of contour lines and number total of droplets so that the distance between adjacent droplets is proper.

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