椭圆异型挤压塑性成形及模腔映射优化

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摘　　要： 针对非轴对称金属异型挤压塑性流动及模腔研究的理论课题，借助于近代共形映射数学理论研究成果，利用法线收敛法，建立了映射函数解析方法。将三维金属异型材挤压塑性成形问题转化为二维轴对称成形问题，求解椭圆异型挤压金属塑性成形连续流动场和应变速度场的数学解析模型，并应用金属塑性成形理论，建立了精密挤压异型材优化模腔的数学模型，同时为精密快速地实现挤压模腔的CAD/CAM一体化目标提供了技术支持。

关键字： 　 塑性成形；挤压；模腔；优化

Mapping optimization of plastic deformation and die cavity in ellipse special-shaped extrusion

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Abstract: On basis of the theory of metal plastic fluid and research of die cavity on non-axis-symmetry extrusion of special-shaped products, in virtue of mathematical research results of the conformal mapping theory， by using method of normal convergence， numerical value analysis of mapping function was built. Three-dimension metal plastic deformation of special-shaped products was transformed into two-dimension axis-symmetry problem， analysis model of the continuous stream and strain rate fields were sought in metal plastic deformation of ellipse-shaped product. By metal plastic theory， the mathematical model optimized to ellipse die cavity is established in exact extrusion. The integrative goal that realizes quickly

CAD/CAM of exact ellipse product die cavity is supported.

Key words: plastic deformation; extrusion; die cavity; optimization