A Nonlinear Analysis of Metal Cutting in the Built-up Edge Region

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Abstract: *When cutting mild steel, aluminium and other ductile materials under certain conditions built-up edge (BUE) often appear on the tool. Under these conditions, the friction between the chip and the tool is so great that the chip material welds itself to the tool face. The resulting pile of material is known as BUE. This is generally a more or less fixed wedge shaped body of material located at the cutting edge. Die cutting speed has a great influence on the formation of BUB. In this paper, a nonlinear model for metal cutting in the built-up edge region has been proposed. This nonlinear model is investigated with the help of an analog computer. The results of the analog simulation have been presented in this paper.*

Keywords: *Metal cutting, nonlinear analysis, built-up edge (BUP), analog simulation*