



# The role of the support stiffness in straight cutting of a thin sheet

**Prof. Andrea Nobili**

Università di Modena

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## Abstract

We address the simple and yet important problem of straight cutting of a thin sheet in die or across a table edge. The mechanical problem envisages non-symmetric support conditions which introduce considerable complications in the solution process. Yet, a semi-analytical solution is obtained through casting the matrix Wiener–Hopf problem in terms of a pair of convolution integral equations defined on a semi-infinite domain. Likewise, the stress intensity factors are obtained and strongly depend on the foundation stiffness. Results reveal the fundamental role that the foundation plays in affecting the direction of cutting, with important implications in practical applications.

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