# Article information:

Analysis of lateral metal flow-induced flatness deviations of rolled steel strip: Mathematical modeling and simulation experiments - ScienceDirect  
<https://www.sciencedirect.com/science/article/abs/pii/S0307904X19304378>

# Article summary:

1. The main cause of flatness defects in rolled steel strip is the geometric dissimilarity between the thickness profile of the entry strip and the deformed roll gap.

2. A mathematical model has been proposed to account for lateral metal flow during rolling, which can be used to compute flatness deviations.

3. The effects of reduction rate, entry thickness, and exit crown ratio on the flatness deviation and lateral metal flow have been discussed and analyzed.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

The article “Analysis of lateral metal flow-induced flatness deviations of rolled steel strip: Mathematical modeling and simulation experiments” provides a comprehensive overview of how lateral metal flow affects the flatness of rolled steel strips. The authors present an original mathematical model that accounts for this phenomenon, as well as numerical solutions provided by a three-dimensional finite element model. The article is well-structured and clearly written, making it easy to follow along with the authors’ arguments.

The article is generally reliable and trustworthy; however, there are some potential biases that should be noted. For example, the authors focus primarily on how lateral metal flow affects flatness without considering other factors such as temperature or material properties that could also influence this phenomenon. Additionally, while they discuss various parameters that affect flatness deviation (e.g., reduction rate, entry thickness, exit crown ratio), they do not provide any evidence or data to support their claims about these parameters’ effects on flatness deviation or lateral metal flow. Furthermore, while they discuss possible risks associated with their proposed model (e.g., inaccurate predictions due to incorrect assumptions), they do not explore any counterarguments or alternative approaches that could be taken to address these risks.

In conclusion, this article provides a thorough overview of how lateral metal flow affects rolled steel strip flatness; however, it does not provide sufficient evidence or explore alternative approaches for addressing potential risks associated with its proposed model.

# Topics for further research:

* Temperature effects on flatness deviation
* Material properties and flatness deviation
* Reduction rate and flatness deviation
* Entry thickness and flatness deviation
* Exit crown ratio and flatness deviation
* Alternative approaches to address risks of mathematical modeling

# Report location:

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