# Article information:

Mesoscopic Modeling Approach and Application for Steel Fiber Reinforced Concrete under Dynamic Loading: A Review - ScienceDirect  
<https://www.sciencedirect.com/science/article/pii/S2095809922001448>

# Article summary:

1. Steel fiber reinforced concrete (SFRC) has superior mechanical response to dynamic and impact loadings.

2. Mesoscopic modeling approach, which assumes SFRC to be composed of different mesoscale phases, has been widely employed to simulate the dynamic responses of SFRC material and structural members.

3. The addition of short and discrete fibers in concrete can sufficiently improve the tensile and shear strength of the mixture, namely the fiber reinforced concrete (FRC).

# Article rating:

Appears moderately imbalanced: The article provides some useful information, but is missing several important points or pieces of evidence that would be required to present the discussed topics in a balanced and reliable way. You are encouraged to seek a more balanced perspective on the presented issues by exploring the provided research topics and looking at different information sources.

# Article analysis:

作为一篇综述性文章，本文对钢纤维增强混凝土在动态荷载下的介观建模方法和应用进行了全面的回顾。文章首先介绍了钢纤维增强混凝土的优越性能，然后详细讨论了介观建模方法在研究钢纤维增强混凝土动态响应方面的应用。文章总结了不同阶段的材料模型和纤维与混凝土基质之间相互作用关系，并给出了一些例子来说明这些模型在不同类型的动态荷载下的适用性。

然而，本文存在一些潜在偏见和片面报道。首先，文章没有提到其他类型的纤维增强混凝土（如玻璃纤维、碳纤维等）在动态荷载下的表现情况，因此读者可能会认为钢纤维是唯一有效的选择。其次，文章没有探讨钢纤维增强混凝土在长期使用中可能出现的问题（如腐蚀、老化等），这也是一个重要但被忽略的考虑点。

此外，本文提出了一些主张，但缺乏充分证据支持。例如，在介观建模方法中使用不同阶段材料模型可以更好地理解钢纤维在基质中的作用行为，并进一步捕捉钢纤维增强混凝土在动态荷载下的失效机制。然而，文章并未提供足够证据来支持这种做法是否真正有效。

最后，本文还存在宣传内容和偏袒倾向。例如，在介绍钢纤维增强混凝土时，作者只提到其优越性能而没有提及其潜在风险；另外，在讨论材料模型时，作者只列举了部分研究结果而没有平等地呈现双方。

因此，在阅读本文时需要保持批判思考，并注意其中存在的潜在偏见和不足之处。

# Topics for further research:

* Other types of fiber-reinforced concrete under dynamic loads
* Long-term durability of steel fiber-reinforced concrete
* Evidence supporting the use of different material models in mesoscale modeling
* Potential risks associated with steel fiber-reinforced concrete
* Balanced presentation of research results on material models
* Potential biases and limitations in the article

# Report location:

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