# Article information:

Effect of local thermal non-equilibrium on thermoporoelastic response of a borehole in dual-porosity media - ScienceDirect  
<https://www.sciencedirect.com/science/article/abs/pii/S1359431117365560>

# Article summary:

1. The thermoporoelastic response of fluid-saturated porous rocks around a wellbore has been widely studied, with more elaborate formulations such as dual porosity and multiple-porosity models developed to provide more precise descriptions.

2. Local thermal non-equilibrium (LTNE) can have an effect on the thermoporoelastic response of fractured dual-porosity media, and various models have been developed to account for this effect.

3. Analytical solutions for fully coupled thermos-hydro-mechanical (THM) models in fractured formations with dual porosity and LTNE assumptions are lacking, but can be obtained using linearized equations and numerical Laplace inversion. Heat transfer coefficients can be calibrated using the Kozeny-Carman equation, and specific surface values can help determine whether LTE or LTNE assumptions are appropriate.

# 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:

本文主要介绍了在双孔介质中考虑局部热非平衡对井筒热弹性响应的影响。文章提到了传统的单孔隙度和单渗透率介质的热弹性理论可能过于粗略，因此发展了更为精确的双孔隙度概念和多孔隙度本构模型。同时，文章还讨论了局部热非平衡对地质材料的影响，并提出了一些解决方法。

然而，文章存在一些问题。首先，文章没有充分探讨局部热非平衡条件的确定方法，只是简单地列举了几种方法，并未给出具体建议。其次，文章没有充分考虑不同条件下局部热非平衡对结果的影响程度，导致结论可能不够准确。此外，文章也没有涉及到实际应用中可能遇到的风险和挑战。

总之，本文提供了一些有价值的信息和思路，但需要进一步完善和深入探讨。

# Topics for further research:

* Determining local thermal non-equilibrium conditions
* Impact of local thermal non-equilibrium under different conditions
* Risks and challenges in practical applications
* Dual-porosity concept and porous media constitutive models
* Effects of local thermal non-equilibrium on geological materials
* Proposed solutions for addressing local thermal non-equilibrium effects

# Report location:

<https://www.fullpicture.app/item/cb0d4645fde3716664776d9ac9579992>