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Letter to the Editor: Comments on 'About the Beavers and Joseph Boundary Condition', DOI: 10.1007/s11242-009-9435-9

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In a recently accepted article to this Journal (J.-L. Auriault 2010), the author of the mentioned article incorrectly quotes our recent article Jäger and Mikelić (2009).

We feel obliged to correct the following statements of the author:

> "The paper by Jäger and Mikelić (2009) is a tentative to demonstrate the BJ condition by using the rigorous technique of asymptotic expansions which itself is based on the separation of scales small parameter epsilon. At the first order of approximation, the classical adherence condition is recovered on the porous medium surface. However, the corrector to this first order condition is obtained by assuming the shear stress on the interface in the free fluid to be equal to the surface average of the shear stress in the pore fluid. This is not physically admissible, because of the presence of the porous skeleton: on the interface, the free fluid is in contact with both the pore fluid and the solid matrix."

Our response:

1. We did not make the assumptions as the author claims. If the author would have read our article Jäger and Mikelić (2000), quoted in the above mentioned article, and followed our arguments, then he could have seen: The corrector is constructed by a purely mathematical procedure without doing any assumption of this kind.
2. Our results on the conditions by Beavers, Joseph and Saffman are in the meantime, quoted by many authors in their articles correctly. We are very astonished that the

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article of Auriault could pass the reviewing process. The state of the art has to be quoted correctly by any author.

3. We also refer to a second article Jäger et al. (2001), where also numerical experiments can be found. Also this article is highly quoted in Google Scholar.
4. Looking at the electronic pre-publication of Auriault's article, we have several questions. Here is one of them referring to page 8: It is not clear whether Auriault's boundary layer, with prescribed velocity and pressure at infinity, exists at all. It is surprising to see that one gets a full periodic function of $y = (y_1, y_2)$ as y_2 converges to $-\infty$.
5. What does the approximation, formulated by the author, represent? What is its relation to the interface boundary conditions by Beavers, Joseph and Saffman?

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