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Claire Chainais-Hillairet (Université de Lille, INRIA) - Corrosion of iron in an underground repository: modelling and mathematical analysis

mercredi 21 septembre 2022 14:00 (45 minutes)

The modelling and the numerical simulation of corrosion take part in the general description of the nuclear waste repository. The derivation of models that are accurate in the long-time regime is a challenge, especially in this context. In this talk, I will start by recalling the Diffusion Poisson Coupled Model introduced by Bataillon et al. en 2010. The derivation of the DPCM does not rely on energetic considerations, so that thermodynamic stability is not clear. Then I will show that some minor corrections lead to a thermodynamically consistent model. This new model has a variational structure and I will explain how we have established the existence of a global-in-time solution.

This is a joint work with Clément Cancès, Benoît Merlet, Federica Raimondi and Juliette Venel.