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# On the existence of periodic solutions to a free boundary problem for adsorption phenomenon

Naoki Sato\*<sup>1</sup>

<sup>1</sup>Nagaoka National College of Technology – Nishikatahai 888, Nagaoka City, Niigata, Japan, Japan

## Abstract

We study a one-dimensional free boundary problem, which is a mathematical model for an adsorption phenomenon appearing in concrete carbonation process. This model was proposed in line of previous studies of three dimensional concrete carbonation process. We talked a result about the existence and uniqueness of a time-local (strong) solution to this system at the last meeting of Equadiff. This result was obtained by means of the abstract theory of nonlinear evolution equations and Banach's fixed point theorem, and especially, the maximum principle applied to our problem played a very important role to obtain the uniform estimate to approximate solutions. Aiki and Murase proved the existence of a time-global (strong) solution to this system by contradiction in 2014. In this talk we intend to report some results of the existence of periodic solution of the problem.

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\*Speaker