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Existence and uniqueness for a lubrication problem with nonregular conditions on the free boundary. (English) [Zbl 0612.35026](#)

Boll. Unione Mat. Ital., VI. Ser., B 3, 543-557 (1984).

The authors are concerned with the problem of cavitation in a finite width journal bearing when non-regular conditions are apparent on the reformation interface. Since in this case the standard variational inequality approach is not appropriate, the problem is modelled by a nonlinear variational equation. The main emphasis is on the proof of existence and uniqueness of a solution to that equation.

Reviewer: [R.H.W.Hoppe](#)

MSC:

- [35G30](#) Boundary value problems for nonlinear higher-order PDEs
- [35R35](#) Free boundary problems for PDEs
- [35D05](#) Existence of generalized solutions of PDE (MSC2000)
- [76B10](#) Jets and cavities, cavitation, free-streamline theory, water-entry problems, airfoil and hydrofoil theory, sloshing

Cited in **1** Review
Cited in **13** Documents

Keywords:

[Reynolds equation](#); [lubrication](#); [nonregular interface conditions](#); [cavitation](#); [nonlinear variational equation](#); [existence](#); [uniqueness](#)