

Colli, P.; Visintin, A.

On a class of doubly nonlinear evolution equations. (English) Zbl 0707.34053
Commun. Partial Differ. Equations 15, No. 5, 737-756 (1990).

Summary: The abstract equation $A \frac{du}{dt} + Bu \ni f$ is considered for A and B nonlinear maximal monotone operators in a Hilbert space H , with A bounded, B unbounded and such that its domain $D(B)$ is contained in a Banach space V compactly embedded in H . Existence results are proved for the related initial-value problem, requiring that either A or B be the subdifferential of a convex and lower semicontinuous function, and assuming suitable coerciveness conditions. Arguments are based on monotonicity and compactness techniques.

MSC:

[34G20](#) Nonlinear differential equations in abstract spaces
[35K55](#) Nonlinear parabolic equations
[35G25](#) Initial value problems for nonlinear higher-order PDEs
[47H20](#) Semigroups of nonlinear operators

Cited in **1** Review
Cited in **73** Documents

Keywords:

[nonlinear maximal monotone operators](#); [Hilbert space](#); [coerciveness](#)

Full Text: [DOI](#)

References:

- [1] DOI: 10.1007/BF01176474 · Zbl 0497.35049 · doi:10.1007/BF01176474
- [2] Bamberger A., étude d'une équation doublement non linéaire, Internal Report (1975)
- [3] DOI: 10.1137/0510052 · Zbl 0462.45021 · doi:10.1137/0510052
- [4] DOI: 10.1016/0022-0396(69)90023-0 · Zbl 0176.09003 · doi:10.1016/0022-0396(69)90023-0
- [5] Benilan P., Sur un problème d'évolution non monotone dans L^2 Internal Report (1975)
- [6] DOI: 10.1007/BF01456275 · Zbl 0609.35048 · doi:10.1007/BF01456275
- [7] D. Blanchard, A. Damllamian, H. Guidouche A nonlinear system for phase change with dissipation to appear on *Differential Integral Equations*.
- [8] DOI: 10.1137/0519070 · Zbl 0685.35052 · doi:10.1137/0519070
- [9] Brézis H., Opérateurs maximaux monotones et semi-groupes de contractions dans les espaces de Hilbert (1973) · Zbl 0252.47055
- [10] Carroll R. W., *Mathematics in Science and Engineering* (1976)
- [11] DOI: 10.1137/0512062 · Zbl 0477.47037 · doi:10.1137/0512062
- [12] Duvaut, G. and Lions, J. L. 1969. Sur des nouveaux problèmes d'inéquations variationnelles posés par la Mécanique. Le cas d'évolution, Vol. 269, 570–572. Paris: C.R. Acad. Sci. · Zbl 0193.07702
- [13] Duvaut G., *Inequalities in mechanics and physics* (1976) · Zbl 0331.35002
- [14] Ekeland I., *Analyse convexe and problèmes variationnels* (1974) · Zbl 0281.49001
- [15] Germain P., *Cours de mécanique des milieux*
- [16] DOI: 10.1016/0022-1236(72)90080-8 · Zbl 0251.35055 · doi:10.1016/0022-1236(72)90080-8
- [17] Halpen B., *J. mécanique* 14 pp 39– (1975)
- [18] Lions J. L., *Quelques méthodes de résolution des problèmes aux limites non linéaires* (1969)
- [19] DOI: 10.1016/0022-1236(70)90031-5 · Zbl 0199.42401 · doi:10.1016/0022-1236(70)90031-5
- [20] DOI: 10.1137/0506004 · Zbl 0268.35045 · doi:10.1137/0506004

This reference list is based on information provided by the publisher or from digital mathematics libraries. Its items are heuristically matched to zbMATH identifiers and may contain data conversion errors. It attempts to reflect the references listed in the original paper as accurately as possible without claiming the completeness or perfect precision of the matching.