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Smooth irrotational flows in the large to the Euler-Poisson system in \mathbb{R}^{3+1} . (English)

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Commun. Math. Phys. 195, No. 2, 249-265 (1998).

The paper deals with a simple two-fluid model describing the dynamics of a plasma by means of the Euler-Poisson system, where the compressible electron field interacts with its own electric field against a constant charged ion background. The existence of a unique global solution of the Euler-Poisson system is proved. Global smooth irrotational flows are constructed with small velocity of the electron fluid.

Reviewer: [Georg V. Jaiani \(Tbilisi\)](#)

MSC:

[35Q35](#) PDEs in connection with fluid mechanics

[76X05](#) Ionized gas flow in electromagnetic fields; plasmic flow

[35A05](#) General existence and uniqueness theorems (PDE) (MSC2000)

Cited in **2** Reviews
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Keywords:

[plasma](#); [irrotational flows](#); [Euler-Poisson system](#); [existence of a unique global solution](#)

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