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The atomic number – charge relation in the nuclear matter in bulk BARBARA PATRICELLI, MICHAEL ROTONDO, REMO RUFFINI, ICRANet and University of Rome "Sapienza" — We determine theoretically the atomic number (A)- charge relation in the nuclear matter in bulk with the model recently proposed by Ruffini et al. (2007). We compare this relation with the data of the Periodic Table, finding a very good agreement. Our relation also agrees with the semi-empirical one obtained from the Weizsacker mass formula up to A$\sim 10^4$. For higher values of A our relation has a different behaviour and we interpret this as a result of the penetration of electrons (initially confined in an external shell) inside the core that becomes more and more important by increasing the atomic number; these effects are not taken into account in the semi-empirical mass-formula.

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