1

the field-equations is admissible, but in the direct-particle
interaction theory only those solutios of the field-equations
are admissible that satisfy the additional requirement :
$M_0(x) = \sum M^{(a)}(x) = \sum \int G * (x, a) \, da$
$= \frac{1}{2} \cdot \sum \int G_{ret.}(x, a) \, da + \frac{1}{2} \cdot \sum \int G_{adv.}(x, a) \, da$
This requirement is highly restrictive ; it will be shown
that it is not satisfied for the cosmological solutions of
the Einstein field-equations, and it appears that it cannot
be satisfied for any models of the universe that either
contain an infinite amount of matter or undergo infinite
expansion.

2

The difficulty is similar to that occurring in
Newtonian theory when it is recognized that the universe
might be infinite.

3

The Newtonian potential ϕ obeys the equation :

[1]

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