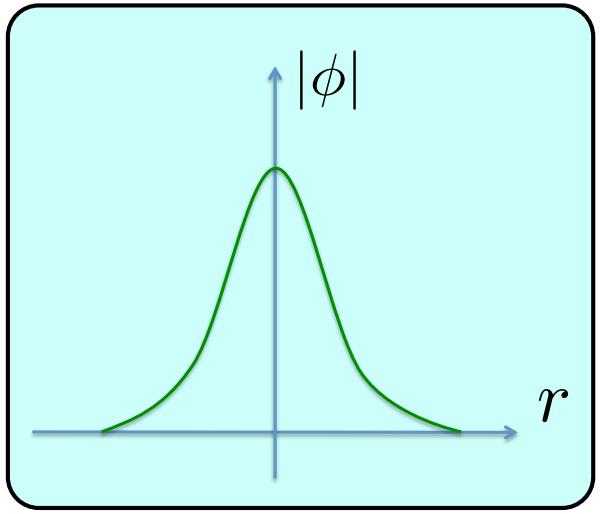
Q balls
in thermal logarithmic potential

Kohei Kamada
(RESCEU, The Univ. of Tokyo)

based on : T. Chiba, KK, M. Yamaguchi, Phys.Rev.D81:083503,2010, arXiv: 0912.3585
T. Chiba, KK, S. Kasuya, M. Yamaguchi, arXiv:1007.4235

Q ball ... a non-topological soliton that is formed in the context of Affleck-Dine baryogenesis

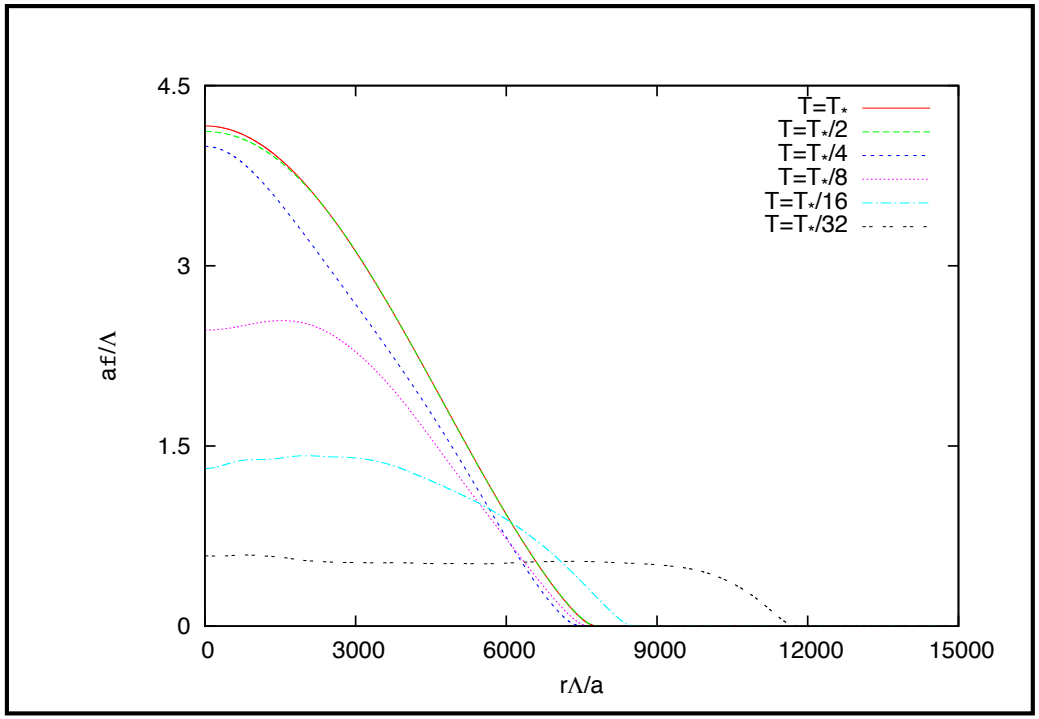


Gravitational Waves from Q-ball formation can be a probe of AD mechanism.

The Q-ball dominated era is the problem for the detection of such GWs.

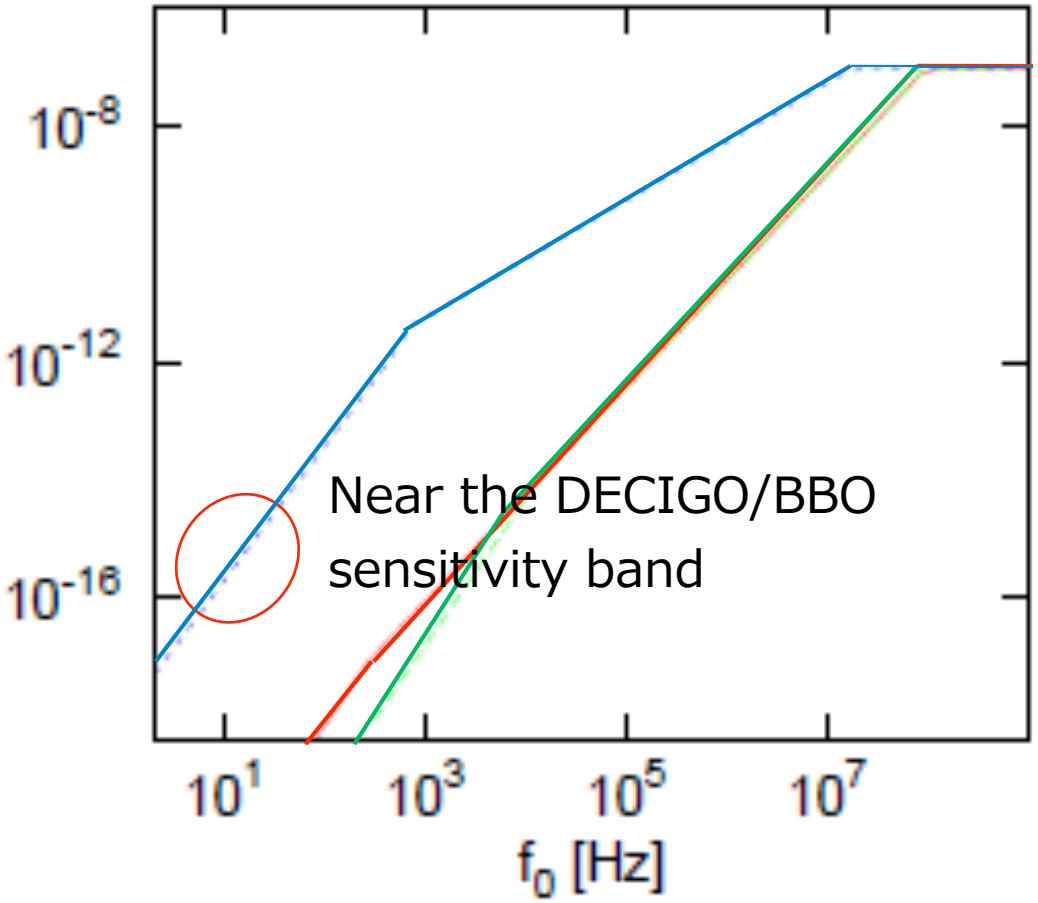
Q balls formed by thermal potential can help the situation since such Q balls are hard to dominate the energy density of the Universe.

We study the Q balls in thermal potential in more detail and find that the field configuration follows a new class of Q ball, thermal thin type Q-ball, in a specific scenario.



In the situation where the thermal thin type Q-balls are formed, GWs from the Q-ball formation may be detected in the future.

$\Omega_{GW}^{0,\max}$



Thernal -> gauge

Thernal -> gravity

Thernal -> gravity
-> gauge