

Why Aren't Infraparticles Already Wigner Particles?

Source: <http://sci.tech-archive.net/Archive/sci.physics.research/2005-05/msg00283.html>

- *From:* markwh04@xxxxxxxxxx
 - *Date:* Sun, 15 May 2005 07:05:35 +0000 (UTC)
-

Wigner's classification of particles systems as irreducible representations of the Poincare' group doesn't apply to charged particles. The more general notion of particle classes in the presence of long-range forces is that of an "infraparticle". Correspondingly, there is a host of literature on trying to combine Wigner + infraparticle classifications.

But the first question that comes to mind is: why bother with all this effort, isn't the problem ALREADY handled by the same techniques? In particular, the symmetry group for a Yang-Mills field is the product of the local gauge group and the Poincare' group. So, shouldn't a Wigner classification on $(U(1) \times \text{Poincare}')$ suffice to give you the desired results for a long-range $U(1)$ force?

.

- *Follow-Ups:*
 - ◆ [**Re: Why Aren't Infraparticles Already Wigner Particles?**](#)
◇ *From:* Thomas Larsson
 - ◆ [**Re: Why Aren't Infraparticles Already Wigner Particles?**](#)
◇ *From:* Arnold Neumaier
- *Prev by Date:* [**Re: 10 questions on QM postulates**](#)
- *Next by Date:* [**Re: Rotation in N-space**](#)
- *Previous by thread:* [**Re: 10 questions on QM postulates**](#)
- *Next by thread:* [**Re: Why Aren't Infraparticles Already Wigner Particles?**](#)
- *Index(es):*
 - ◆ [**Date**](#)
 - ◆ [**Thread**](#)