1086-35-1710 **Daniele Garrisi*** (daniele.garrisi@gmail.com), Nam-Gu, Inha University, Department of Mathematics Education (444), Incheon, Incheon 402-751. *Orbital stability of standing-waves by means of the symmetric rearrangement.*

Very often, in literature the orbital stability of standing-wave solutions to evolution problems (such as the non-linear Schroëdinger equation and the non-linear wave equation) is proven by showing the existence of a minimizer to a suitably chosen variational problem

$$I(\lambda) = \inf_{S(\lambda)} J$$

and that I satisfies the sub-additivity property, that is

$$I(\lambda) < I(\lambda_1) + I(\lambda_2), \quad \lambda = \lambda_1 + \lambda_2.$$

Such inequality is known to rule out the dichotomic case in the Concentration-Compactness Lemma of P. L. Lions. The inequality is achieved by a rescaling argument in the scalar case, or by exploiting the symmetry of the non-linear term for systems of non-linear equations. We propose an approach to the sub-additivity property which exploits the properties of the symmetric rearrangement. We show, in particular, that standing-wave solutions to a coupled system of non-linear Klein-Gordon equations

$$v_{tt}^j - \Delta_x v_j + m_j^2 v_j + \partial_j F(v) = 0, \quad 1 \leq j \leq 2$$

are orbitally stable. An example of the non-linearity we have in mind is

$$F(z) = -|z_1 z_2|^p + G(z_1, z_2), \quad 2F + \sum_{j=1}^{2} m_j^2 z_j^2 \geq 0.$$

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