Erratum: Exploring the landscape of (anti-) de Sitter and Minkowski solutions: group manifolds, stability and scale separation

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With this erratum we aim at clarifying a confusion in our statements due to an abuse of language: while we often used the words “flat direction”, what we meant was actually a “massless scalar field”. The former refers to a scalar field which is completely absent of a scalar potential V, and which is for this reason massless. The latter is more general, allowing in particular scalar fields appearing in the scalar potential V, but which are massless either because of a specific functional dependence in V or because of the peculiarities of the solution where the mass is evaluated; it also includes flat directions.

This clarification matters for the discussion of the proposed Massless Minkowski Conjecture, appearing in the Introduction (section 1) and in section 3.4.2, and summarized in the abstract. Properly formulated, it should read as follows:

Massless Minkowski Conjecture:

10d supergravity solutions compactified to 4d Minkowski always admit a 4d massless scalar, among the fields (\rho, \tau, \sigma_I).
Several references to this conjectured scalar field are made in the text in the Introduction, and one should trade there the words “flat direction” for “massless scalar field”. To the description of this conjecture that is given in these two sections, we add the following information: let us also emphasize that the conjectured massless scalar field is not necessarily a flat direction.

In section 3.4.2, one should read: “the systematic presence of such a 4d massless scalar field in classical, or at least 10d supergravity, Minkowski solutions is commonly believed to be true.” Various references to the literature are provided there as illustrations, before stating the conjecture: some admit flat directions (e.g. with no-scale potentials) but some other examples only mention massless scalar fields. These remain in both cases valuable illustrations for our conjecture. Finally, the solution $s_{051}^0$ mentioned later in this section also admits a massless scalar field, which is not necessarily a flat direction.

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