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A flavour of family symmetries in a family of flavour models

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Propositions

accompanying the thesis

A flavour of family symmetries in a family of flavour models

1. The recent evidence of non-zero reactor neutrino mixing angle forces theorists to think beyond the tribimaximal paradigm. One possibility is to consider other groups than A_4 and S_4 that are generated by the same principles though. The group $\Delta(384)$ provides a mixing pattern that is very close to the data for both leptons and quarks.

This thesis, chapter 3

2. Family symmetries can be combined with grand unified symmetries. Extra care should then be taken to the evaluation of the running coupling constants between the high energy scale of flavour dynamics and the low scale of observation.

This thesis, chapter 4

3. The scale of flavour symmetries can be as low as the electroweak breaking scale. Models of this type can already be severely constrained by pre-LHC data and should be fully testable at the LHC.

This thesis, chapter 5

4. The residual symmetries that survive when a flavour symmetry is broken, can be used to stabilize a dark matter candidate.

This thesis, chapter 5

5. All strong evidence that the Standard Model is incomplete originates from astronomical and astrophysical observations.

6. The Large Hadron Collider at CERN will either find or exclude the existence of the Higgs particle. Both possibilities are equally exciting for the theoretical physics community.

7. In the next decade, new data on neutrinos are expected from oscillation experiments, single beta decay endpoint experiments, double beta decay experiments, supernova observations and better determination of baryon acoustic oscillations. That all these experiments reach the required sensitivity at almost the same time, looks like a rare case of finetuning.

8. The AdS-CFT conjecture is only starting to show its true power, now that it also gives insight in QCD and condensed-matter systems.

9. One hour of sunshine contains enough energy to satisfy humanitys energy consumption for a full year. Therefore, there is no energy shortage problem, at most an energy conversion and transport problem.

10. It is remarkable that the majority of the 5% poorest people in the Netherlands are among the 5% richest people in the world.

11. This house believes that the Turkish military should stop enforcing the separation of church and state.