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**Frode Ronning\*** ([frode.ronning@hist.no](mailto:frode.ronning@hist.no)), Sor-Trondelag University College, Fac. of Teacher Education, 7004 Trondheim, Norway. *Islamic decorations and wallpaper groups.*

Islamic buildings are very often richly decorated with patterns covering large surfaces, and it is mathematically interesting to classify these patterns in terms of their symmetries, i.e. connecting each pattern to one of the 17 wallpaper groups. On many occasions the question has been raised whether one in decorations from Islamic art will find representatives of all the 17 different wallpaper groups, and contradicting answers to this question have been given. In particular this question has been thoroughly investigated, and with contradicting conclusions, in connection with the Moorish palace Alhambra in Spain. In this talk I will discuss how it can be possible to come to different conclusions about the existence of all 17 wallpaper patterns, in particular within a restricted area like the Alhambra palace. I will address some problems that come up when trying to determine which wallpaper group a given pattern belongs to. This will connect to fundamental ideas about the nature of mathematical concepts and the relation between a mathematical concept, its representations and the reference contexts in which it appears. The talk will be richly illustrated with pictures, in particular from the Alhambra. (Received August 12, 2010)