A U S H A N G

FREIE UNIVERSITÄT BERLIN

Fachbereich Mathematik und Informatik

Promotionsbüro, Arnimallee 14, 14195 Berlin

D I S P U T A T I O N

Mittwoch, 26. Juni 2013, 16.00 Uhr

Ort: Arnimallee 3, 14195 Berlin, Raum 005

Disputation über die Doktorarbeit von

Frau Bibinur Shupeyeva, Mag. Math.

Thema der Dissertation:

Some Basic Boundary Value Problems for Complex Partial Differential Equations in Quarter Ring and Half Hexagon

Thema der Disputation:

Tiling of the plane: from mosaics to virus cells

Die Arbeit wurde unter der Betreuung von
Prof. Dr. H. Begehr und Prof. Dr. A. Schmitt durchgeführt.

Abstract: Tilings are the geometrical patterns that appear in many everyday situations. We meet them as the brick buildings, pavements, puzzles, mosaics, glazed tiles in bathrooms, football etc. The topics and ideas in art, architecture, crystallography, cartography and other fields inspire mathematicians to study tessellation. The major question is: can any shape tile the plane and, if so, how? Starting with Kepler's *Harmonice Mundi*, 1619, where the tilings by the regular polygons were first presented, I will have a sketch of possible tilings by regular as well as irregular polygons (Grünbaum and Shephard, Chavey, Krötenheerdt) and the *Penrose* tiling which is widely used in crystallography. The Escher-like tilings e.g by people or animals (W.Freeman) and their use criteria will be shown. I will also give an example of application of the tiling in modeling of virus progression based on the article *Cellular automata model of HIV infection on tilings of the plane* (C.Ormerod, 2006).

Die Disputation besteht aus dem o. g. Vortrag, danach der Vorstellung der Dissertation einschließlich jeweils anschließenden Aussprachen.

Interessierte werden hiermit herzlich eingeladen

Vorsitzende der Promotionskommission
Prof. Dr. H. Begehr und Prof. Dr. A. Schmitt