1125-52-1202 **Wlodzimierz Kuperberg*** (kuperwl@auburn.edu), Department of Mathematics and Statistics, Auburn University, Auburn, AL 36849. *Extensive parallelograms and double-lattice packings.* Preliminary report.

A parallelogram inscribed in a given convex disk K in the plane is *extensive* if each of its sides is at least as long as one-half of the affine diameter of K parallel to the side. A packing of the plane with congruent copies of K is a *double-lattice* packing if it is the union of two lattice packings, one by translates of K, and the other by translates of $-K$, where the two underlying lattices are translates of each other. The speaker, jointly with Greg Kuperberg (1990) proved that each convex disk K admits a double-lattice packing of density at least $\sqrt{3}/2 = 0.866\cdots$. For the regular pentagon and heptagon the densest double-lattice packings were found, of density $(5-\sqrt{5})/3 = 0.92131\cdots$ and $0.8926\cdots$, respectively. They conjectured that the densest double-lattice packing with regular pentagons is of maximum density among all packings with its congruent copies. Recently, some results were obtained by Kallus & Kusner, and Hales & Kusner, indicating that a complete proof of the conjecture may appear soon. In this talk some overlooked questions concerning double lattice packings will be discussed, including a conjecture for double-lattice packings analogous to the classical theorem of Lászlo Fejes Tóth about lattice packings. (Received September 15, 2016)