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A holomorphic quadratic differential  $q$  determines a flat metric on the surface with zeros removed. Cylinders and immersions of interiors of ellipses are examples of immersed conics. The set of immersed conics whose frontiers meet at least 5 zeros may be regarded as the vertex set of a graph. Roughly speaking, two conics are adjacent iff they share four zeros. We show that this graph is connected, and we exhibit a precise relationship between the automorphism group of the weighted graph and the affine self-mappings of the surface. This work is a byproduct of our study of certain tessellations of the hyperbolic plane naturally associated to each translation surface by Veech and, later and independently, Bowman. (Received January 20, 2009)