

*Open Mappings on 2-Dimensional Manifolds**

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1. Introduction. The major conclusion concerning light open mappings as applied to 2-dimensional manifolds are: (1) the scattered inverse property—counterimages of points are sets having no limit points, (2) the invariance of manifold—the image set is likewise a 2-manifold, (3) the local topological analysis—locally the mapping is equivalent to a power mapping or to a power mapping followed by a reflection, (4) the existence of a constant degree for compact mappings, (5) the characteristic equation

$$k\chi(B) - \chi(A) = kr - n$$

connecting the Euler characteristics of the original and image (compact closed) manifolds, the degree k , and the numbers r of singular points on B and n of their inverse image points on A , and (6) dimensionality preservation for arbitrary open mappings.** None of these conclusions is known for such mappings on higher dimensional manifolds, although it is known that some of them, *e.g.*, (2) and (6), do not hold in the form here stated. In order to obtain higher dimensional extensions or analogues of these results, new techniques seem to be required.

In the interest of a possible development in this direction there is presented in this paper a new localization theorem for light open mappings in a general

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** For references see STOLOW [2] and WHYBURN [3,4]. Light open mappings were first studied by STOLOW who, in 1928, established the basic results (1) and (3) under the assumption that both the domain and range spaces are 2-dimensional manifolds. Later the author was able to prove (1) without assuming any special structure for the range space and, on this basis, obtained results (2), (4), and (5) along with a new treatment of (3). As far as can be readily determined, result (6) has not been explicitly published. However, as will be shown below, it is obtainable from the other theorems along with factorization techniques that have now become standard.