SLIT MAPS AND SCHWARZ-CHRISTOFFEL MAPS
FOR MULTIPLY CONNECTED DOMAINS[*]

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Dedicated to Richard Varga on his 80th birthday
and to the memory of Dieter Gaier and their Oberwolfach meetings
on Constructive Methods in Complex Analysis.

Abstract. We review recent derivations of formulas for conformal maps from finitely connected domains with circular holes to canonical radial or circular slit domains. The formulas are infinite products based on simple reflection arguments. An earlier similar derivation of the Schwarz-Christoffel formula for the bounded multiply connected case and recent progress in its numerical implementation are also reviewed. We give some sample calculations with a reflection method and an estimate of its accuracy. We also discuss the relation of our approach to that of D. Crowdy and J. Marshall. In addition, a slit map calculation using Laurent series computed by the least squares method in place of the reflection method is given as an example of a possible direction for future improvements in the numerics.

Key words. conformal mapping, Schwarz-Christoffel transformation, multiply connected domains, canonical slit domains, Schottky-Klein prime function

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