tions appropriate for the regions with the coefficients in the expansions being the unknowns. Algebraic equations in $\mathfrak{N}$ for these coefficients are derived by equating the solutions for the two subregions and their normal derivatives on the interface between the regions.

The two regions can arise from functional as well as geometric considerations. Thus, consider the potential of a cylinder, say $\{0<r<1; 0<x<1\}$ where $u=0$ on $\{r=1; 0<x<1/2\}$ and $\partial u/\partial r=0$ on $\{r=1; 1/2<x<1\}$, and $u=1$ on $\{0<r<1; x=0\}$ and $\{0<r<1; x=1\}$. In this case the two regions would be $\{0<r<1; 0<x<1/2\}$ and $\{0<r<1; 1/2<x<1\}$.

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ON LOCAL DIFFEOMORPHISMS ABOUT AN ELEMENTARY FIXED POINT

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Let R^n be the real n-space with O as the origin. Let $\boldsymbol{G}$ be the group of the germs of C^∞ local diffeomorphisms about O as a fixed point. We say that T, $T' \in \boldsymbol{G}$ are equivalent if they are conjugate in the group $\boldsymbol{G}$. Denote by Θ the natural homomorphism from the group $\boldsymbol{G}$ onto the group $\mathfrak{G}$ of the ∞-jets at O. The fixed point O of $T\in\boldsymbol{G}$ will be said to be elementary if the Jacobian $J(T)$ has no eigenvalue of absolute value equal to 1.

Let $\boldsymbol{A}$ be the Lie algebra (over R) of the germs of C^∞ local vector fields about O and vanishing at O. We also use Θ to denote the natural homomorphism of the Lie algebra $\boldsymbol{A}$ onto the Lie algebra $\mathfrak{A}$ of the ∞-jets.

THEOREM 1. *Let the fixed point O of $U\in\boldsymbol{G}$ be elementary. Then U is equivalent to $T=\phi\eta$, ϕ, $\eta\in\boldsymbol{G}$, such that*

(a) *ϕ is a nonsingular semisimple (i.e., diagonalizable over the field of the complex numbers) linear transformation of R^n,*

(b) *$J(\eta)$ is equal to the identity mapping of R^n plus a nilpotent linear tranformation,*

(c) $\phi\eta=\eta\phi$.

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