

The edge of the wedge theorem

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Hartogs was the first to note that holomorphic functions of several complex variables have interesting extension properties. Hartogs' extension is from functions defined near a hypersurface. Actually, one can replace "near" by "on" if we think in terms of formal power series. Such results were extended to solutions of overdetermined systems of partial differential equations by the author.

"Hypersurface" can be replaced by lower dimensional surfaces S provided that S contains a "Cauchy surface". The edge of the wedge theorem deals with the case that S itself is a Cauchy surface.

Nirenberg and Fefferman asked the author if "solution" can be replaced by "asymptotic solution". To solve this problem, the author presents a sharpening of the Cauchy-Kowalewsky theorem for which "solution" is replaced by "asymptotic solution" and the Cauchy data belongs to various Gevrey spaces – which depend on the nature of the asymptotic.