On hypoellipticity of degenerate elliptic operators

Timur Akhunov (University of Rochester)

Solutions of the Laplace equation are always smooth in the interior of the domain. This property, called hypoellipticity, is inherited by the solutions of the uniformly elliptic operators. However, if the elliptic operator is degenerate in some directions, would solutions still be smooth? Ellipticity is such a powerful effect, that degeneracy may not be enough to create singular solutions. The type of degeneracy matters and we investigate a large class of indefinitely degenerate operators.