

# INSTITUTE OF INFRASTRUCTURE, TECHNOLOGY, RESEARCH AND MANAGEMENT

## INVITED TALK (2016 – 17)

**Speaker:** Prof. C. S. Dalawat

**Title:** Solving Equations by Radicals, from Galois to Last Year

**Date:** 02/03/17

### Abstract

On March 2, 2017 Prof. C. S. Dalawat from Harish Chandra Research Institute, Allahabad delivered a talk on “Solving Equations by Radicals, from Galois to Last Year.” Dr. Gautam Borisagar introduced the speaker. Apart from all members of the Mathematics department, Prof. A. U. Digraskar, Hon. director, many students and other faculty members attended the talk. Prof. Dalawat started with Cardano’s work on solving the cubic and later efforts on solving the quartic. He explained how the Norwegian mathematician Niels Heinrich Abel proved that a general quintic cannot be solved by radicals. This naturally lead to the question why there was no formula for the roots of a fifth (or higher) degree polynomial equation in terms of the coefficients of the polynomial, using only the usual algebraic operations (addition, subtraction, multiplication, division) and application of radicals (square roots, cube roots, etc) .Then he described the stellar work of Evariste Galois who showed that whether a polynomial was solvable or not was equivalent to whether or not the permutation group of its roots had a certain structure. He briefly referred to his own research work done during last year which used some of these techniques.

At the end of the presentation Prof. Dalawat talked about career opportunities in Mathematics also. Students asked many interesting questions after the presentation. The talk ended with a presentation of a memento to the speaker by Dr. Shanti Prasanna and a vote of thanks proposed by Dr. Mohit Sharma .