TITLES AND ABSTRACTS OF TALKS FOR INTERCITY NUMBER THEORY SEMINAR

1. Anilatmaja Aryasomayajula
Title: Bergman kernels and their applications in Geometry and Number Theory.
Abstract: Bergman kernels associated to Hermitian line bundles defined over complex manifolds carry a lot of geometric information about the underlying manfiold. In this talk, we discuss estimates of the Bergman kernel associated to the cotangent bundle defined over a hyperbolic Riemann surface of finite volume, and the applications of these estimates in geometry and number theory.

2. R. Balasubramanian
Title:
Abstract:

3. Abhishek Bharadwaj
Title: On Generalised Euler Briggs Constant.
Abstract: While the irrationality of the Euler's constant is not known, there are some results about the irrationality of the various 'avatars' of this constant notably the ones introduced by Briggs, and also the ones introduced by Diamond and Ford. In a recent work, Gun Saha and Sinha had defined the Generalised Euler Briggs constant and there were subsequent studies about the dimension of the vector spaces spanned by these numbers over number fields. We investigate the linear relations of these numbers over number fields and also introduce a p adic analogue of the sam

4. Venketasubramanian C G
Title:
Abstract:

5. Sumit Giri
Title: Distribution of Frobenius Angles.
Abstract: The group of solutions of the elliptic curve equation modulo a prime has been intensively studied since Gauss, and in the 1920's Hasse proved a tight bound for the number of solutions, known since as "The Riemann Hypothesis for elliptic curves over a finite field". He showed that, $\big|E_p(\mathbb{F}_p)\big| = p+1-a_p$, where $a_p = 2\sqrt{p}\cos(\theta_p) \leq 2\sqrt{p}$. In 1941, Deuring, building on work of Hecke, showed that for elliptic curves with complex multiplication, the Frobenius angle θ_p is uniformly distributed as the prime p varies. Here we discuss fine scale statistics of these angles, in particular the variance of the number of such angles in a short arc. This is a joint work with Zeev Rudnick and Shuai Zhai.

6. Dipramit Majumder
Title: Selmer companion Modular forms.
Abstract: Selmer groups are algebraic objects associated to Elliptic curves (more generally to motives). Selmer group associated to an Elliptic curve E encodes lot of arithmetic information about E, for example, under weak Tate-Shafarevich conjecture one has (algebraic) rank of an elliptic curve E is same as the co-rank of the p^∞-Selmer group associated to E. Mazur and Rubin studied the question: Given an Selmer group S_E associated to E, how much information can we obtain about the elliptic curve E? More precisely, given two elliptic curves E_1 and E_2, when does E_1^χ and E_2^χ have same Selmer group for χ? (Here E^χ is the twist of E by a quadratic

character χ.) We study an analogues question for modular forms. This is a joint work with S. Jha and S. Shekhar.

7. M. Ram Murty
Title: The Error term in the Sato-Tate Theorem of Birch
Abstract: In 1968, Brian Birch proved a Sato-Tate distribution law for Frobenius angles attached to elliptic curves over a finite field of p elements. In this talk, we will calculate the rate of convergence to this distribution and show it is best possible. This is joint work with Neha Prabhu.

8. V. Kumar Murty
Title: Splitting of Abelian varieties
Abstract: We discuss the phenomenon of simple Abelian varieties over a number field that split modulo p for every prime p. This is a geometric analogue of the well known phenomenon of irreducible polynomials over the integers which factor modulo p for every prime p.

9. Patrice Philippon
Title: Arithmetic geometry of toric varieties.
Abstract: We will discuss arithmetic aspects of toric varieties and explain how these enters in the classical dictionary between the geometry of these varieties and combinatorial datas. An application to counting the number of common zeros of polynomials will be given.

10. Jyothsna Sivaraman
Title: Primitive roots for Piatetski-Shapiro primes.
Abstract: Given a $c \in (1, \frac{12}{11})$ a prime number of the form $[n^c]$, where $[x]$ is used to denote the integral part of x, is called a Piatetski-Shapiro prime. In this talk we will show that there exist (infinitely many) finite sets of natural numbers such that one of them is a primitive root for infinitely many primes of this form.