**Thematics - Exponential and Character Sums**

**1. week, February 12:** The course starts at 12:30 on Monday. Today, we studied the first 3 chapters of the lecture notes: „1. Notations", „2. Parseval formula and Ramanujan sums" and „3. Group characters". We also watched the video „Functions as Sums of Exponentials" (the material of the videos is not part of the exam).

**2. week, February 19:** We studied the 4th Chapter: „4. Additive Characters".

**3. week, February 26:** We studied the 5th Chapter: „5. Gauss sums." We watched the video „Complex Fourier Series."

**4. week, March 4:** We studied the 6th Chapter „Vinogradov's lemma" and 7th Chapter „Weyl sums and Weil theorem."

**5. week, March 11:** We studied 8th Chapter „Erdő and Moser"s problem." We watched the video „ Gauss sums."

**6. week, March 18:** We studied 9th Chapter „Kloosterman sums". We also started 10th Chapter „Multiplicative characters", where we reached Theorem 10.4.

**7. week, March 25:** We studied 11th Chapter „Gauss sums (part 2)." The homework was the following: try to give nontrival estimate for $|\sum_{a\in\mathcal{A}}\sum_{b\in\mathcal{B}}\chi(a+b)|$, where $\chi$ is a multiplicative character.

**8. week, April 8:** We studied 12th Chapter: „The dual of Vinogradov's lemma". We also start 13th Chapter, but we only finished the proof of Lemma 13.1 (a theorem of Winterhof).

**9. week, April 15:** We finished 13th Chapter „Is Weil's theorem sharp?". We started 14th Chapter „Pólya-Vinogradov inequality", but we only proved Theorem 14.2.

**10. week, April 22:** We studied 14th Chapter „Pólya-Vinogradov inequaliy and Vinogradov's method for estimating incomplete character sums','

**11. week, April 29:** We studied 15th Chapter „Short multiplicative character sumsand the least quadratic non-residue." We watched the video „Top ten open problems in number theory."

**12. week, May 6:** We studied 15th Chapter „Large sieve." We finished the semester at Theorem 16.5 (Balog-Sárközy) whose proof was not studied.

**13. week, May 13:** Students gave talks.