ABEL-PLANA SUMMATION FORMULA AND ITS VARIANTS

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Abstract

In this talk, we first review the work of a Russian mathematician, N. S. Koshliakov. He derived beautiful generalizations of the classical Abel–Plana summation formula through a setting arising from a boundary value problem in heat conduction. As a special case his formulas reduce to the classical Abel–Plana summation formula. Ramanujan also stated different analogues of the Abel–Plana summation formula in his notebooks. We will see that Ramanujan's analogues are nothing but the special case of our main result. Ramanujan also provides a vast new generalization of the classical transformation formula for Eisenstein series, which we will generalize in Koshliakov's setting.

This is a joint work with Professor Bruce C. Berndt, Professor Atul Dixit, and Professor Alexandru Zaharescu.