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On level two analogue of Arakawa-Kaneko zeta function and poly-cosecant numbers

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We study the level two generalization of Arakawa-Kaneko zeta function originally studied by T. Arakawa and M. Kaneko. We obtain certain new formulas for the level two analogue of Arakawa-Kaneko zeta function. Also, we study the level two generalization of poly-Bernoulli numbers, which is referred to as the poly-cosecant numbers. We obtain a recurrence and two explicit formulas for poly-cosecant numbers. Moreover, we extend those formulas for multiple versions in a similar manner.

The latter part is a part of a joint work with M. Kaneko and H. Tsumura.

Keywords: Arakawa-Kaneko zeta function, Multiple zeta values, Poly-Bernoulli numbers, Poly-cosecant numbers