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Kailash C. Misra*, Department of Mathematics, North Carolina State University, Raleigh, NC 27695-8205, and **Toshiki Nakashima**. *$A_n^{(1)}$ -Geometric Crystal corresponding to Dynkin index $i = 2$ and its ultra-discretization.*

Let g be an affine Lie algebra with index set $I = \{0, 1, 2, \dots, n\}$ and g^L be its Langlands dual. It is conjectured that for each $i \in I \setminus \{0\}$ the affine Lie algebra g has a positive geometric crystal whose ultra-discretization is isomorphic to the limit of certain coherent family of perfect crystals for g^L . We prove this conjecture for $i = 2$ and $g = A_n^{(1)}$. In particular, we give explicit construction of the $A_n^{(1)}$ -geometric crystal with positive structure and prove that its ultra-discretization is isomorphic to the crystal $B^{2,\infty}$. (Received August 09, 2012)