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**Kailash C. Misra\***, 2311 Stinson Dr., Raleigh, NC 27695-8205.  $D_6^{(1)}$ - *Geometric Crystal and its ultra-discretization*.

Let  $\mathfrak{g}$  be an affine Lie algebra with index set  $I = \{0, 1, 2, \dots, n\}$  and  $\mathfrak{g}^L$  be its Langlands dual. It is conjectured that for each Dynkin node  $i \in I \setminus \{0\}$  the affine Lie algebra  $\mathfrak{g}$  has a positive geometric crystal whose ultra-discretization is isomorphic to the limit of certain coherent family of perfect crystals for  $\mathfrak{g}^L$ . In this talk we construct a positive geometric crystal  $\mathcal{V}(D_6^{(1)})$  in the level zero fundamental spin  $D_6^{(1)}$ - module  $W(\varpi_6)$ . Then we define explicit 0-action on the level  $\ell$  known  $D_6^{(1)}$ - perfect crystal  $B^{6,\ell}$  and show that  $\{B^{6,\ell}\}_{\ell \geq 1}$  is a coherent family of perfect crystals with limit  $B^{6,\infty}$ . Finally we show that the ultra-discretization of  $\mathcal{V}(D_6^{(1)})$  is isomorphic to  $B^{6,\infty}$  as crystals which proves the conjecture in this case. This is joint work with Suchada Pongprasert. (Received January 08, 2020)