# Referee report on
# *Bethe vectors and recurrence relations for twisted Yangian based models*,
# by Vidas Regelskis

The author has answered to most of the questions I raised. It remains one point (see point 4) that should be clarified. I also added some other remarks that I leave to the author.

1. On line 110, the letter $u, v, w..$ are said to correspond to complex numbers or formal parameters, but the first use of $w$ is for the partial transposition (lines 132 and 137). At least a change of font for the partial transposition would be nice. In general transposition is indicated by a symbol $(...)^t$, but it seems that the author does not want to use it, although it would clarify things for the reader.

2. In eq. 2.15, indicate the range of summation for $i, j$

3. Still around eq. (2.15) the notion of "overlapping" (which I do not find very enlightening, although understandable) could be circumvented using $\hat{n} = \left[\frac{N+1}{2}\right]$ and $\hat{n}' = \left[\frac{N}{2}\right]$ such that $\hat{n} + \hat{n}' = N$. I believe that what the author means is that $A$ is a $\hat{n}' \times \hat{n}'$ matrix, $B$ is a $\hat{n}' \times \hat{n}$ matrix, $C$ is a $\hat{n} \times \hat{n}'$ matrix and $D$ is a $\hat{n} \times \hat{n}$ matrix (whatever the parity of $N$). That would avoid the discussion on overlapping, but I understand that this imply a lot of changes, so I leave it to the author.

4. The notation explained in line 400 is very confusing: the notion that un-mentioned (sub)sets are considered as empty is very delicate to employ. For instance, on eq. (4.2), from line 400, I would conclude that $\boldsymbol{v}^{(1\dots n)} = \emptyset$, which seems not to be the case. This occurs several times. I think that the author cannot avoid to be more precise, for instance in eq. following line 401 to use $\sum_{|\boldsymbol{u}^{(r)}|=0 \atop r<i} \sum_{|\boldsymbol{u}^{(r)}|=k \atop i<r}$ instead of $\sum_{|\boldsymbol{u}^{(r)}|=k \atop i<r}$, or to add a text after the equation to specify which subsets are empty.

   I think this point has to be clarified (in a way or another) before publication.

5. There is a typo in the second line of the eq. following line 418: $\boldsymbol{u}_{II}^{(s)}$ should be $\boldsymbol{v}_{II}^{(s)}$