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THE VANISHING CYCLES OF TYPES
A$_{\frac{1}{2}\infty}$ AND D$_{\frac{1}{2}\infty}$
(Geometry on Real Closed Field and its Application to Singularity Theory)

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THE VANISHING CYCLES
OF
TYPES $A_{\frac{1}{2}\infty}$ AND $D_{\frac{1}{2}\infty}$

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Abstract. We introduce two real entire functions $f_{A_{\frac{1}{2}\infty}}$ and $f_{D_{\frac{1}{2}\infty}}$ in two variables, having only two critical values 0 and 1. Associated maps $\mathbb{C}^2 \rightarrow \mathbb{C}$ define topologically locally trivial fibrations over $\mathbb{C}\setminus\{0,1\}$. The critical points over 0 and 1 are ordinary double points, whose associated vanishing cycles in the generic fiber span its middle homology group and their intersection diagram forms the bi-partite decomposition of quivers of type $A_{\frac{1}{2}\infty}$ and $D_{\frac{1}{2}\infty}$, respectively. Coxeter element of type $A_{\frac{1}{2}\infty}$ and $D_{\frac{1}{2}\infty}$ are introduced as the product of the monodromies of the fibrations around 0 and 1. We describe the spectra of the intersection form (normalized in the interval [0, 4]) and the Coxeter elements (normalized in the interval $(-\frac{1}{2}, \frac{1}{2})$).

The present note is taken from the abstract of a preprint of the author: RIMS-1710 (Jan. 2011), Coxeter elements for vanishing cycles of types $A_{\frac{1}{2}\infty}$ and $D_{\frac{1}{2}\infty}$, which is going to appear elsewhere.