東海大学理学部数学・情報数理談話会 (Zoom)

以下の要領において談話会を開催致します. 多数の方の御来聴をお待ち致しております.

日程　2021 年 11 月 17 日 (水) 17:15 〜 18:15
場所　Zoom
招待リンク　https://us02web.zoom.us/j/89409720082
(パスコードについては案内メールをご参照ください)
講演者　内村桂輔氏 (東海大学名誉教授)
タイトル　Dynamics of Chebyshev endomorphisms on some affine algebraic varieties

アブストラクト: The Chebyshev polynomials T_d in one variable are typical chaotic maps on $\mathbb{C}$. Chebyshev endomorphisms $P^d_{A_n} : \mathbb{C}^n \to \mathbb{C}^n$ are also chaotic. We consider the action of the dihedral group D_{n+1} on $\mathbb{C}^n$. The endomorphism $P^d_{A_n}$ maps any $D_{n+1}-$orbit of $\mathbf{z} \in \mathbb{C}^n$ to a D_{n+1}-orbit of $P^d_{A_n}(\mathbf{z})$. The endomorphism $P^d_{A_n}$ induces a mapping on $\mathbb{C}^n/D_{n+1}$. Using invariant theory we embed $\mathbb{C}^n/D_{n+1}$ as an affine subvariety X in $\mathbb{C}^m$. Then we have morphisms g_d on X. We study the cases $n = 2$ and 3. In these cases the morphisms g_d are defined over $\mathbb{Z}$. We find a class of affine subvarieties V of X which are invariant under g_d. These varieties are concerned with branch loci or critical loci.The class contains $\mathbb{C}^2$, a cuspidal cubic, a parabola, a quadric hypersurface in $\mathbb{C}^4$, an affine algebraic surface in $\mathbb{C}^4$ which is birationally equivalent to an affine quadric cone in $\mathbb{C}^3$, and others. For each affine variety V in the class, there exists a polynomial parametrization P_V satisfying $g_d\,|_V\,(P_V(y_1,\ldots,y_k)) = P_V(T_d(y_1),\ldots,T_d(y_k))$, where $T_d(z)$ is a Chebyshev polynomial in one variable. Then we determine the set of bounded orbits of $g_d\,|_V$ in each invariant set V and give relations between them.

世話人:　那須弘和 (情報数理学科)
nasu@tokai-u.jp