MATHEMATICS COLLOQUIUM

Poncelet polygons, the Painleve VI and the Schlesinger equations

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Abstract: In 1990s Hitchin constructed explicit algebraic solutions to the Painleve VI (1/8,-1/8,1/8,3/8) equation associated to the Poncelet polygons, inscribed in a conic and circumscribed about another conic. We will show that Hitchins construction is the Okamoto transformation between Picards solution and the general solution of the Painleve VI (1/8,-1/8,1/8,3/8) equation and it can be formulated in an invariant way, in terms of an Abelian differential of the third kind on the associated elliptic curve. This allows us to obtain solutions to the corresponding Schlesinger system in terms of this differential as well. The solution of the Schlesinger system admits a natural generalization to higher genera, and it is related to higher-dimensional Poncelet-type polygons. This is a joint work with V. Shramchenko. The research is supported by the NSF grant No. 1444147.

Dr. Vladimir Dragovic (vladimir.dragovic@utdallas.edu), Professor and Department Head at UT Dallas. Main research interests in algebra-geometric approach to integrable dynamical systems, with applications to classical and statistical mechanics. Received BSCI and DSCI in Mathematics from the University of Belgrade. Published more than 60 papers and several books. Co-organizer of GDIS and TexAMP conferences.

Date: **Friday, February 3, 2017**
Time: 1:00pm-2:30pm
Place: MAGC 1.302

Refreshments will be served at 12:55pm
For further information, or for special accommodations, please contact Dr. Zhijun Qiao via email at zhijun.qiao@utrgv.edu or at 956-665-3406.