GLOBAL COMPLEX OBSTRUCTIONS TO A REAL MORSE MODIFICATION (KLEIN'S ENIGMA)

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A real algebraic variety can occupy a special position in its complexification. For instance, it can be zero-homologous $\mod 2$ or homologous mod2 to a complex subvariety. This may create additional structures on the variety and obstructions to its Morse modifications within a family of real algebraic varieties. In 1876 Felix Klein wrote that a curve dividing its complexification does not admit a development. In the talk this statement will be clarified, proved and generalized.

This is a joint work with Slava Kharlamov.