INTRODUCTION
Recent development of transportation systems, particularly in highly urbanized areas, is focused on personal rapid transportation systems. Superconducting tapes are good candidates for coils in electrical motor used in such solution. The proposed solution is focused on analysis of properties of HTS tapes and driving systems based on linear DC motor with permanent magnets.

AIR GAP MAGNETIC FIELD ANALYSIS
The analysis of the magnetic field in the airspace was carried out for two models (normal arrangement and Halbach’s arrangement) and for the distance between the individual magnets: 0 mm, 2 mm and 4 mm to find the best solution. The magnetic field was calculated on magnets surface and 3 mm, 6 mm and 9 mm above the magnets, from the strongest side of the magnet.

MAPPING THE MAGNETIC FIELD
Measurements are carried out for single array of magnets using Magnet-Physic teslameter FH-54. The baseline for mapping with 10 measurement points was located in the mid on the top surface of magnets.

MEASUREMENTS OF CRITICAL CURRENT
The measurements were carried 14 mm long probe Measurements were carried out on a 4 mm long section of tape located in middle part between two Halbach arrays.

NUMERICAL MODEL
A FEM analysis has been carried out using ANSYS Maxwell software. Results are obtained by magneto-static calculations assuming the remanent magnetic flux density of 1.35 T and relative magnetic permeability of magnets equal to 1. The value of the magnetic field on the surface of the HTS tape is extremely important from the point of view of determination of critical current or critical current density.

THE INFLUENCE OF TEMPERATURE
The PM materials have a temperature dependent properties. There is a shift about 30 deg in magnetization vector

CONCLUSION
- HTS material are good candidates to operate in PM linear motor
- The external magnetic field inside a PM array are not constant dependence
- It is important to know how a properties of PM in LN

KEYWORDS: HTS tape characterization; critical current; Halbach arrays

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