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**Shonia Giorgi\*** ([shonia@ohio.edu](mailto:shonia@ohio.edu)), Ohio University Lancaster, 1570 Granville Pike, Lancaster, OH 43130-1037. *Topology of invariant subspace lattice of shift operators in higher dimensions.*

Analytic description of invariant subspaces of the shift operator on a Hilbert space has been offered by Beurling's celebrated theorem and later generalised to shifts of arbitrary multiplicity. Using these results, following a study by R. Douglas and C. Pearcy description of path connected components of invariant subspace lattice for shift of multiplicity one has been given by R. Yang. In present paper we generalise result to arbitrary finite multiplicity. We show that there exists one to one correspondence between the invariant subspace lattice of a shift of arbitrary finite multiplicity and the space of inner functions.

The result is established first by constructing a family of inner functions in  $L^2$  continuous manner. Among other, this requires selection of unique representative from a family of unitarily equivalent inner functions in a continuous manner. Finally, based on  $L^2$  continuity, using techniques of reproducing kernel, sup norm continuity is proved.

The case of infinite multiplicity remains open to further research. (Received September 21, 2009)