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## Abstracts of Short Communications and Posters

### Section:

## 16. Applications

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**Solution For Certain Three Dimensional Boundary Value Problems With Mixed Boundaries**

In many boundary value problems, the boundaries involved are natural surfaces in different coordinate systems. This does not allow the use of functions and / or harmonics belonging to a single system of coordinates which naturally gives rise to difficulties in obtaining a solution. Smythe (1968) introduced an analytical approach to study electrostatic problems of this sort involving mixed spherical, spheroidal and cylindrical boundaries. This approach utilized the expressions of harmonics in a certain system of coordinates in terms of harmonics in another system. In the present work, we follow the same approach to obtain solutions for other potential (electrostatic and hydrodynamic) problems.

Reference: W. R. Smythe, Static and dynamic electricity, 3d ed. , McGraw-Hill, Inc. (1968). See also the references included in it.