For a wide class of systems of linear partial differential equations of second order which can be characterized the solutions can be represented using certain differential operators acting on holomorphic functions. To obtain the solutions defined in multiply-connected domains we have to investigate the properties of these holomorphic functions which generate the solutions desired.

As examples some particular systems arising in physics are considered. In this cases we can extend the class of systems for which the solutions can be represented in an explicit way using certain integral operators.