1139-35-50 **Tariel Kiguradze** (tkigurad@fit.edu) and **Noha Aljaber*** (naljaber2013@my.fit.edu), 150 W. University Blvd, Melbourne, FL 32901. *Periodic Problems for Higher Order Linear Hyperbolic Equations.*

For the equation

$$u^{(\mathbf{m})} = \sum_{\boldsymbol{\alpha}<\mathbf{m}} p_{\boldsymbol{\alpha}}(x)u^{(\boldsymbol{\alpha})} + q(x) \tag{1}$$

consider the periodic

$$u(x + \boldsymbol{\omega}_j) = u(x) \quad (j = 1, \ldots, n) \tag{2}$$

and the initial-periodic

$$u^{(\mathbf{k}_j)}(x_1, \ldots, x_{j-1}, 0, x_{j+1}, \ldots, x_n) = \varphi_{jk_j}(\hat{x}_j) \quad (k_j = 0, \ldots, m_j - 1; j = 1, \ldots, n_0),$$
$$u(x + \boldsymbol{\omega}_j) = u(x) \quad (j = n_0 + 1, \ldots, n) \tag{3}$$

conditions. Here $n \geq 2$, $\mathbf{m} = (m_1, \ldots, m_n)$, $x = (x_1, \ldots, x_n)$, $\boldsymbol{\omega} = (\omega_1, \ldots, \omega_n)$,

$$\boldsymbol{\omega}_j = (0, \ldots, \omega_j, \ldots, 0), \quad \mathbf{k}_j = (0, \ldots, k_j, \ldots, 0), \quad \hat{x}_j = (x_1, \ldots, x_{j-1}, x_{j+1}, \ldots, x_n)$$
$$\boldsymbol{\alpha} < \mathbf{m} \Leftrightarrow \alpha_j \leq m_j \ (j = 1, \ldots, n), \quad \boldsymbol{\alpha} \neq \mathbf{m}.$$

For problems (1), (2) and (1), (3) there are established:
(i) Necessary and sufficient conditions of well-posedness;
(ii)Optimal conditions of solvability and unique solvability in ill-posed (conditionally well-posed) cases. (Received January 23, 2018)