Alessia E. Kogoj* (alessia.kogoj@uniurb.it), University of Urbino, Piazza della Repubblica 13, 61029 Urbino, PU, Italy, and Ermanno Lanconelli (ermanno.lanconelli@unibo.it), University of Bologna, Piazza di Porta San Donato 5, 40126 Bologna, Italy. *On the Dirichlet problem in cylindrical domains for evolution Oleinik–Radkevic PDE’s: a Thychonov-type theorem.

We are concerned with linear second order PDE’s of the type:

\[ \mathcal{L} = \mathcal{L}_0 - \partial_t := \sum_{i,j=1}^n \partial_x (a_{i,j} \partial_x) - \sum_{j=1}^n b_j \partial_x - \partial_t. \]

We assume \( \mathcal{L}_0 \) with nonnegative characteristic form and satisfying the Oleinik-Radkevic rank hypoellipticity condition. By using Potential Theory, these hypotheses allow to construct Perron-Wiener solutions of the Dirichlet problems for \( \mathcal{L} \) and \( \mathcal{L}_0 \) on bounded open subsets of \( \mathbb{R}^{n+1} \) and of \( \mathbb{R}^n \), respectively.

Our main result is the following Thychonov-type Theorem:

Let \( O := \Omega \times ]0, T[ \) be a bounded cylindrical domain of \( \mathbb{R}^{n+1}, \Omega \subset \mathbb{R}^n, x_0 \in \partial \Omega \) and \( 0 < t_0 < T \). Then \( z_0 = (x_0, t_0) \in \partial O \) is \( \mathcal{L} \)-regular for \( O \) if and only if \( x_0 \) is \( \mathcal{L}_0 \)-regular for \( \Omega \).

As an application of our Main Theorem we show some regularity criteria for the boundary point in the Dirichlet problem for degenerate Ornstein–Uhlenbeck operators, as consequences of analogous criteria for Kolmogorov-Fokker-Planck equations. (Received September 14, 2018)