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GLOBAL SOLVABILITY FOR A CLASS OF SYSTEMS ON $\mathbb{T}^3$

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We consider a system of vectors fields $L_j = \partial_{t_j} + (a_j(t_1,t_2) + ib_j(t_1,t_2))\partial_x$, $a_j, b_j \in C^\infty(\mathbb{T}^2;\mathbb{R})$, $j = 1,2$ acting on $\mathcal{D}'(\mathbb{T}^3)$. In the case when $a_1 = a_2 \equiv 0$ the global solvability of such a system is completely determined by the connectedness of the sublevel and superlevel sets of a primitive of the 1-form $b = b_1dt_1 + b_2dt_2$ in the minimal covering. In this talk we discuss some related results when b is exact and $a = a_1dt_1 + a_2dt_2$ has irrational periods.

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