Composition operators on the polydisc

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Talk given at Seminar on Complex Analysis,
meeting 2322, March 21th, 2022

We study the boundedness of composition operators on the weighted Bergman spaces and the Hardy space over the polydisc $\mathbb{D}^n$. Studying the volume of sublevel sets we show for which n the necessary conditions obtained by Bayart are sufficient. For arbitrary polydisc we prove the rank sufficiency theorem which, in particular, provides us with a simple criterion describing boundedness of composition operators on the spaces over the bidisc. Such a consistent characterization is obtained for the classical Bergman space over the tridisc.