Diophantine equations in moderately many variables

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We study the density of solutions to a general system of Diophantine equations for which the underlying variety is a non-singular complete intersection. The circle method gives precise information about the density of solutions if the number of variables is large enough in terms of the number of equations and their degree. We derive upper bounds that are valid for a considerably smaller number of variables, using a multidimensional q-analogue of van der Corput differencing due to Heath-Brown.