

**Dybov, Yu. P.**

**On a variational method for a class of solutions of the quasi-linear Beltrami equation.**

(Russian. English summary) [Zbl 0705.30025](#)

Dokl. Akad. Nauk Ukr. SSR, Ser. A 1989, No. 3, 18-20 (1989).

Let  $\mathfrak{F}$  denote the family of quasiconformal mappings  $f: \mathbb{C} \rightarrow \mathbb{C}$ . The author constructs a variational method for the class  $\mathfrak{F}$  with variations of the form

$$f_t = f - t\Phi \circ f + o(t).$$

Various restrictions are imposed on the complex dilatations and other functions that occur. Then the author gives conditions that must be satisfied if  $f \in \mathfrak{F}$  is an extremal function for some arbitrary Gateaux differentiable functional. The results extend results obtained by *M. Schiffer* and *G. Schober* [*J. Anal. Math.* 34, 240-264 (1978; [Zbl 0419.30018](#))] and by *V. Ya. Gutlyanskij* and *V. I. Ryzanov* [*Sib. Mat. Zh.* 28, No.1(161), 81-85 (1987; [Zbl 0623.30028](#))].

Reviewer: Renate McLaughlin

**MSC:**

[30C70](#) Extremal problems for conformal and quasiconformal mappings, variational methods

**Keywords:**

quasiconformal mapping; Gateaux differentiable functional