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(54) **ACTIVE OPTICAL FIBER WITH VARIABLE CROSS-SECTION AREA, METHOD OF PRODUCTION THE SAME (VARIANTS) AND AN OPTICAL SIGNAL AMPLIFIER BASED ON IT**

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(57) **ABSTRACT**

The active optical fiber comprises an active core doped with at least one the active element and at least two reflective claddings; the cross-sectional area of the core and the cross-sectional area of the reflective cladding adjacent to the core continuously change along the length of the active optical fiber so that the maximum total area S^{max} of the cross-sectional area of the core and the reflective cladding is at least twice as large as the minimum total area S^{min} of the cross-sectional area of the core and the reflective cladding; at least one reflective cladding of said at least two reflective claddings comprises at least one modified section configured to reduce the power of the pump radiation propagating along the fiber in at least one reflective cladding after passing the at least one modified section; the at least one modified section of the reflective cladding is located in that region along the axis of the optical fiber, where the total area Sint of the cross-section of the core and the reflective cladding adjacent to the core satisfies the following condition: $1.5\times S^{min}<S^{int}\leq S^{max}$. The method for manufacturing the active optical fiber and the optical signal amplifier based on the active optical fiber are also proposed.