About the result of the Michelson-Morly experiment

Starting from the explanation of the results of the Michelson-Morly experiment given on the base of the 4D medium model [1], one may estimate the time delay for the signal send in the longitudinal direction with respect to the transversal one. The lightpathes to the mirrors and backward are equal respectively

$$l_1 = 2l_0 /\cos^3\alpha$$
$$l_2 = 2l_0 /\cos\alpha \qquad (1)$$

Here l_0 is the arm length at the rest state and α is the angle of the deviation of the transversal ray with respect to the ray at the rest state(see [1] for details). From here the time delay after the reflections of the signals can be wrote as

$$\Delta t = 2l_0 \, tg^2\alpha/c \cos\alpha. \qquad (2)$$

It is the transcendental equation with respect to angle α, which one can simplify if to substitude the velocity V of the interferometer with respect to medium with help of the expression given in [1]

$$V = c \sin\alpha \qquad (3)$$

It results in the cubic equation with respect to the square of V. For the not very big velocities in comparison with the light speed c we have

$$\Delta t = 2 l_0 V^2 /c^3. \qquad (4)$$

Let us estimate it for the velocity of the Earth revolving round the Sun, i.e. for the V is about 30 km per sec. The delay is equal to 10^{-16} sec for the arm length l_0 = 10 m. This value is beyond the sensibility threshold of the photo detectors which is about 10^{-12} sec now. It means that even with using the impulse laser as a light source it is need to use the arms' length up to hundred kilometers to fix the time delay caused by Earth movement through the medium.
The frequency shift Δω is connected with the time delay by the expression

$$\Delta\omega = \omega^2/2\pi n \, \Delta t, \qquad (5)$$

where n is a number of periods of the wave in the lightpath, or

$$n = 2l_0 \, \omega/2\pi c. \qquad (6)$$

After substituting (4) and (6) in eq.(5) the relative frequency shift will put down as follows

$$\Delta\omega/\omega = (V/c)^2 \qquad (7)$$

and can be estimated for Earth velocity on the orbit around the Sun as equal to about 10^{-8}. This value is too low to be fixed by interferometer.
In the conclusion we can say that the time delay and the frequency shift as the effects of the second order with respect to V/c is too small for using the Michelson-Morly interferometer as the velocity detector in the case of the Earth movement velocity around the Sun.

Addendum

On the other day after publication author found in the Internet the paper [2] wrote by Steven Bryant. His analysis obviously shows that the sensibility of the Michelson-Morly interferometer is though sufficient to detect the Earth velocity. It seems don't contradict the estimations made here.

Addendum 2

It was said [1] that there is the distinction in values s_1 and s_2 which is hard to explain. But these values are differed from each other as $2l_0 \tan^3\alpha$, or as third power of v/c at not very big velocity. Therefore that discrepancy may be neglected.

[1] V. Skorobogatov. The Light in the 4D model of Aether. http://vps137.narod.ru/article2a.html. 2006.

[2] Steven Bryant. Revisiting the Michelson and Morly experiment to reveal an Earth orbital velocity of 30 kilometers per second. http://www.relativitychallenge.com/papers.htm. 2006.